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Are tip-of-the-tongue states universal? Evidence from the speakers of an unwritten language

Tim Brennen
University of Oslo, Norway

Anne Vikan
University Hospital of Northern Norway, Tromsø, Norway

Ragnhild Dybdahl
Regional Centre for Child and Adolescent Mental Health, Oslo, Norway

Schwartz (1999, 2002) has claimed that tip-of-the-tongue states (TOTs) are universal. The studies reported in this paper examine this claim for illiterates, unschooled literates, and schooled readers, all speakers of an unwritten Guatemalan language. The first study showed that, although there was little evidence of a dedicated verbal expression for this state of consciousness in the Mayan language of Q'eqchi', a majority of participants in all three groups recognised a description of the phenomenology associated with tip-of-the-tongue states. In two further studies it was shown that TOTs could be induced in all groups of participants, and that they were reliably resolved by the presentation of the words' initials. Thus, even in the absence of an expression for ''tip-of-the-tongue state'', the basic phenomenology and cueing properties of TOTs were similar to those reported in previous studies. However, only university-level participants reported partial knowledge of word targets they had failed to recall. The results are discussed from psycholinguistic and metacognitive perspectives, drawing a possible link between TOTs and epistemic curiosity.

The tip-of-the-tongue state (TOT) was first studied in cognitive psychology by Brown and McNeill (1966). They read definitions of uncommon words to participants and thereby induced naming problems. The phenomenon has been investigated in many experiments since then (for reviews see, e.g., Brown, 1991; Schwartz, 2002; Valentine, Brennen, & Brédart, 1996), and Schwartz (1999) put forward evidence that the tip-of-the-tongue experience is linguistically universal. He asked fluent (mainly mother-tongue) speakers of 51 languages what was the equivalent of the English expression ''to have a word on the tip of your tongue''. In all languages there was an equivalent expression, and furthermore in 45 languages the temporary failure to retrieve a word is described as being on or around the tongue. Schwartz interpreted this remarkably high cross-linguistic agreement as reflecting the universality of phenomenology of TOTs: that it

Address correspondence to: Tim Brennen, Department of Psychology, University of Oslo, PO Box 1094, Blindern, 0317 Oslo, Norway. E-mail: tim.brennen@psykologi.uio.no

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really feels as if there is a word on the tip of one's tongue and that all humans experience TOTs.

However, it is possible that the similarities in TOT expressions between languages reflect not universal phenomenology per se, but rather the constraints on finding an expression for difficult word retrievals: Most times when we are in a TOT our output modality is oral, and it is most natural, therefore, that missing words will be referred to as being on the tongue, without this implying that the word actually feels as if it is on the tongue. In this view the expression should be seen purely as a metaphor: Missing words do not actually feel as if they are on one's tongue, and the tip-of-the-tongue expression should therefore not be taken as reflecting an aspect of the universal phenomenology of a TOT. Thus it is in principle possible that one might experience the phenomenology without having an expression for it, and in this paper we will distinguish between the idea of universality of an expression for TOT and the idea of universality of TOT phenomenology.

As far as universality of TOT phenomenology is concerned, if TOTs reflect temporary blocking of lexical access, i.e., the malfunction of a universal and basic cognitive process, then it seems very likely that TOTs must be universal. However, there is reason to believe that metamemory processes play a role in the aetiology of TOTs, and these by their very nature might be expected to vary between cultures or between people with different educational levels. Schwartz (1998) showed that it is quite possible to induce apparent TOTs in participants for word targets that do not exist, by concealing dummy questions like ''What is the name of Mercury's moon?'' within a list of genuine questions. Such illusory TOTs possess the qualities of a feeling of imminent recall, and of emotionality, that genuine TOTs have, albeit less intensely (Schwartz, Travis, Castro, & Smith, 2000). It appears that people base their judgements of imminence of recall, at least in part, on a judgement of how likely it is that they know a word from that particular semantic domain: ''I used to read a lot of astronomy, so I should know the answer.'' Thus TOTs appear not simply to be an objective index of closeness to recall, but also to reflect a metamemorial judgement.

Although Schwartz has consistently argued both for a universalist view of TOTs and for an inferential component in TOTs, these ideas are in fact logically separable, and we would argue that an inferential view of TOTs may lead to a non-universalist view of TOTs: If the metamemory processes involved in illusory TOTs show wide individual differences, then TOT prevalence and phenomenology might also vary more than a universalist position would predict. Cornoldi (1998) introduced the term metacognitive attitude, meaning the habit of reflecting on one's cognitions. People with high metacognitive attitude savour their thoughts, wonder about the workings of their mind, and thereby find depth that others simply do not find. On the other hand, when people with low metacognitive attitude have difficulty retrieving words, effortful search processes may not be triggered, or they may be perfunctory compared to those who toy with the activity. Without high metacognitive attitude, TOTs might not arise, because they depend on a self-reflective interest in word retrieval. Similarly, wine experts and social drinkers nominally perform the same activity, but one group finds more depth in it.

A related concept is that of epistemic curiosity: the motivation for persistently seeking answers to questions even though the knowledge gained might be neither needed urgently nor useful (Berlyne, 1954). Consider the craze for general knowledge games and quizzes in many Western countries (e.g., Trivial Pursuit), where people answer questions that strain their remote semantic memory just for fun. Participants demonstrate high epistemic curiosity, and it seems probable that this phenomenon must be restricted to highly literate cultures because a written (or other permanent) record is needed in order to check that exactly the same answer is produced to the same question on different occasions: as Goody (2000, p. 28) put it, ''in oral cultures the notion of verbatim recall is hard to grasp.''

The concept of epistemic curiosity can be applied to the situation when someone is in a TOT, where they feel very close to the target word and strive to recall it, in the absence of any extrinsic reward. Indeed Litman, Hutchins, and Russon (2005) showed that when in a TOT, participants were more likely to open an envelope with the answer in it, and rated themselves as more curious about the response, compared to when they hadn't retrieved the target but were not in a TOT. Thus if, as argued above, there is an association between illiteracy and epistemic curiosity, there may also be a link between illiteracy and the experience of TOTs.

Almost all previous studies of TOTs have used highly literate Western participants, whereas the participants in the studies reported in this paper speak a largely unwritten language—one of the 20 Mayan languages spoken in Guatemala: Q'eqchi'. Although there are at least three dictionaries (Caal Ixim, Choc Tzuy, Cac Cucul, & Pacay Rax, 2004; Sedat, 1955; Sam Juarez, Chen Cao, Xal Tec, Cuc Chen and Tuil Pop, 2001) and a handbook for learning Q'eqchi' (Eachus & Carlson, 1980), there are very few books in Q'eqchi', and no newspapers or magazines. Therefore speakers of Q'eqchi' provide an interesting test of Schwartz's universality hypothesis.

Schwartz's universality position predicts that Q'eqchi' participants will experience TOTs and that there will be an expression for ''tip-of-the-tongue state'' in Q'eqchi', which will probably be mouth related. This would be nontrivial, as Q'eqchi', in contrast to Schwartz's 51 languages, is only in an extremely limited sense a written language. In the first study below, illiterates, schooled literates, and unschooled literates were asked whether there is an expression for TOT in Q'eqchi', as well as about phenomenological aspects of difficult word retrievals. According to the United Nations Development Programme (2005), the literacy rate in Guatemala is the lowest in Latin America, at 69.1% of inhabitants over 15 years old. This is probably even lower in the county of Alta Verapaz, where the current studies were carried out. According to Oxlajuuj Keej Maya' Ajtz'iib' (1993), Q'eqchi' became a language in its own right around 1000 years ago, and is currently spoken by approximately 600,000 people, mainly found in the northern Guatemalan counties of Alta Verapaz and Petén, and in the southern part of Belize. Within the urban areas in the Q'eqchi' region, there are now very few Q'eqchi' speakers who do not also speak Spanish. The participants in the first study reported here are Q'eqchi/Spanish bilinguals, and the illiterate participants cannot read in either language.

EXPERIMENT 1

Method

Participants. A total of 65 participants were recruited in and around the city of Cobán, in Alta Verapaz, Guatemala. They were recruited in a variety of everyday situations, e.g., the marketplace, and asked to answer some questions on language and reading. It was explained that the testing would take about 20 minutes, but that they could withdraw at any time if they so desired. Despite the challenging nature of the task, no participant withdrew; in fact, the tests held great fascination for some participants.

Group status was determined by asking participants whether they could read and, if so, where they had learned to read, and how many years schooling they had had. The literate participants had either learned to read as children at school or as adults on a literacy course. The sample contained 18 illiterate participants, 27 schooled literate participants, and 20 unschooled literate participants, of whom 10, 14, and 14 respectively were women. The mean age for each group was 31, the range for the whole sample lying between 25 and 38 years old. None of the illiterates had attended school or an adult literacy course, and 17 of the unschooled literates had not had any schooling (plus 2 with 1 year's schooling and 1 with 2 years'), and the schooled literates had a mean of 3.6 years' schooling ($SD = 1.4$).

Procedure. All the tasks in the present study were carried out in Spanish. The first group of tests was aimed at measuring reading of words. In the first test, the participant's first name was written down on a slip of paper along with two other common first names of the same gender. The task was to point to which was their name. Then, in order to confirm the literacy status of the participants, 11 exemplars of each of two types of words were presented: first, words that one sees frequently on signs around the town, e.g., brand names, the name of the town, ''push'' and ''pull'', ''Guatemala''. The second were words that are normally only seen in books, e.g., complicated, jigsaw. The word reading was aborted for any participant where it became clear that the task was impossible.

The next part of the testing consisted of questions relating to memory for words, particularly when word retrieval proves to be difficult. First participants were asked to think about how it feels to forget someone's name. Then they were asked whether they had ever heard of the expression ''*Lo tengo en la punta de la lengua*'', the Spanish equivalent of ''It's on the tip of my tongue''. The tester then read a description of the tip-of-the-tongue phenomenon:

> It's when you can't remember a name but still feel that the name is very close and that you are

> going to remember it very soon. It can be frustrating, and sometimes it is as if other words are blocking, so that when you try to remember the correct word you always remember another one. Sometimes one can recall parts of the name, but not all of it.

Participants were asked whether this phenomenology appeared familiar to them. Then they were asked what this is called in Q'eqchi', and those responding with an expression were asked whether they had ever heard anybody use the expression in Q'eqchi'. Finally they were asked where in the body it feels as if a word is trapped when one cannot remember it. Participants were then debriefed and rewarded with a small gift, value $\sim 20¢$.

Results

All the schooled literates and all but one of the unschooled literates picked out their name on the three-choice test, as did 5 of the 18 illiterates. The mean numbers of high- and low-frequency words read by the unschooled literates were 6.90 ($SD = 2.0$) and 7.45 ($SD = 2.8$) respectively, for schooled literates the means were 9.78 ($SD = 1.1$) and 9.52 ($SD = 1.3$) respectively. On a two-way ANOVA with the factors of Group and Word Type, excluding the illiterate group who all scored zero on the reading tasks, only the Group source of variance was significant, $F(1, 45) = 25.6$, $p < .05$, due to the schooled group scoring higher than the unschooled literates.

TOTs. Asked whether they had heard of the "*punta de la lengua*" expression, two illiterates (11%) and two unschooled literates (10%) responded affirmatively, compared to nine of the schooled literates (33%), the proportion of the latter group being almost significantly higher than the others, $\chi^2(2) = 5.1$, $p = .08$. On the question of whether they recognised the phenomenology, over two-thirds of the sample (10 illiterates, 19 schooled literates, and 15 unschooled literates) said they did, $\chi^2(2) = 1.8$, *ns*. A total of 8 illiterates, 13 schooled literates, and 10 unschooled literates did not know the TOT expression in Spanish, and yet simultaneously reported the description of the phenomenology to be familiar.

Only three schooled literate participants claimed that there was an expression for tip-of-the-tongue state in Q'eqchi'. For all three of them it was the literal translation of the Spanish, and all spontaneously specified the restricted circumstances under which they used it, e.g., "in my family", "with my friends". Other participants said the way to say it was "I have forgotten the word, but will maybe remember it later". Regarding where a word is when it can't be recalled, all participants said either "in the head" or "in the mind". In addition, a native speaker of Q'eqchi' with a doctorate in Mayan languages was interviewed, and he said there is no expression for tip-of-the-tongue state, although he himself did experience TOTs in Q'eqchi'.

Discussion

Very few illiterates and unschooled literates appear to have heard of the tip-of-the-tongue expression in Spanish, whereas the expression is relatively widely known amongst schooled literates. The questions about word memory revealed that there can hardly be said to be an expression for TOTs in Q'eqchi', although the situation may be changing. Three participants reported using what is a translation of the Spanish expression in Q'eqchi'. It seems likely that the expression is in fact a direct translation from the Spanish, and that the expression is beginning to spread to Q'eqchi' speakers, perhaps in the same way that Canadian francophones, for example, may say "*être en amour avec quelqu'un*", which has crept into the language from the English. Similarly, Norwegians have over the past few years begun to use phrases directly translated from the English, such as "when it comes to . . .", and "I can't come to the phone just now".

To our sample, words that are proving temporarily difficult to recall appear to be in the head or mind, and not specifically on the tongue or in the mouth. Because a sizeable proportion of the sample did not know the expression but recognised the phenomenology, it appears that having an expression for the state is not a prerequisite for experiencing TOTs. Thus the theoretical distinction between universality of a TOT expression and the universality of TOT phenomenology gains empirical support. Despite the report of three participants that they use an expression for tip-of-the-tongue state, it certainly appears to be difficult to maintain a claim that Q'eqchi' has an expression in the same widespread way as, for example, the major European languages. At the

same time, many participants claimed to have experienced TOTs, while not having had an expression to name it.

Experiment 1 demonstrated that participants, including some illiterates, claim to experience the phenomenological characteristics of TOTs. The main aim of Experiment 2 was to determine whether it was possible to induce TOTs in Q'eqchi' participants. The rationale was that the results of Experiment 1 might conceivably be due to acquiescence: participants might have felt that the socially more acceptable answer was confirmation that one experienced TOTs. By using a methodology similar to those used in previous ''Western'' work, this study (Experiment 2) will allow comparison between TOTs in the current samples and TOTs in literate cultures, especially regarding the objective properties of TOTs. A ''Trivial Pursuit''-like question-and-answer format was chosen, similar to that used by Brown and McNeill (1966). In order to maximise the occurrence of TOTs, all questions had people's names as their targets, like Brennen, Baguley, Bright, and Bruce (1990). In addition, in order to obtain objective evidence of closeness to the target word, we cued half the TOTs with the missing names' initials, expecting that TOTs should be resolved by initials (Brennen et al., 1990; Hanley & Cowell, 1988).

According to Schwartz's universality hypothesis, it should be possible to induce TOTs in all participants, regardless of literacy status. One alternative outcome to this is that learning to read leads to metamemorial developments, in metacognitive attitude or epistemic curiosity for example, that lead to the appearance of TOTs. Another alternative is that it is what is learned in school that promotes TOTs, so that only schooled literates, but not unschooled literates, will show TOTs. Experiment 2 was conducted in Q'eqchi', with mother-tongue speakers.

EXPERIMENT 2

Method

Participants. A total of 42 participants were recruited from a hamlet outside Cobán called Aldea China Ichab. All but two spoke Spanish as well as Q'eqchi'. The 15 schooled literates had a mean of 13 years education (range 11–19 years). Of the 15 illiterates, only one had been to school, irregularly for 3 years. The 12 ex-literates had all been taught to read and write by a local teacher. The mean ages of the samples were 31, 28, and 27, respectively, and there were 22 women.

Stimuli. In choosing questions likely to induce TOTs, one needs target people who are in the middle to low range of familiarity: names that are highly familiar are likely to be recalled rather than to induce a TOT. In a country with such uneven access to education, it is difficult to gauge what would constitute good items for inducing TOTs: for instance, on 20 November 2005 a prominent Guatemalan newspaper, *Prensa Libre*, reported that in a poll of 1200 people carried out by Vox Latina in Guatemala's 22 regional capitals, 15.5% of people answered ''No'' to the question ''Do you know who George Bush is?'' So 24 questions were prepared that identified people likely to be known to the participants. Some were international celebrities (''Who is the President of the United States?''; ''Who is Argentina's most famous ever footballer?'') and some were Guatemalan (''What was the name of the Monseñor de Guatemala who was assassinated in 1998?''; ''Who is the indigenous Guatemalan from Quiché who won the Nobel Peace Prize in 1992?''; ''What was the name of the indigenous leader who was tortured to death at a young age in 1815?''). The questions were written in Spanish, but read out in Q'eqchi'.

Procedure. Participants were approached individually in the street by a female Q'eqchi' tester in traditional dress, and asked to answer some questions about famous people they might know. They were told that the questions were part of a research project and that we did not need to know the participant's name. The personal details that they were asked for were age, mother tongue, other languages they spoke and at what age they learned them, how many years of schooling they had had, and what their present occupation was. Then they were given the low-frequency word-reading test from Experiment 1. Participants were then informed that they would now be asked questions about famous people, some of which were difficult and some of which were easy. For any questions that they couldn't answer, they would be asked whether they were sure they knew the answer and whether they were close to recalling it. When a participant answered in the affirmative to both of these it was recorded as a TOT, the same operationalisation of a TOT as in Brown and McNeill (1966). The 24 questions were read out and in cases of TOTs, partial

knowledge was probed for by asking whether the participant knew if the name was long or short, and what the name sounded like. Then TOTs were either followed by the question simply being repeated, or, for alternate TOTs, the initials of the name being uttered (i.e. ''muh-puh'', rather than M.P.). The tester recorded whether each TOT was resolved in the 5 seconds after the cue was presented.

Results

The illiterates were unable to read any words, the unschooled literates read a mean of 7.41 ($SD = 3.1$) words, and the schooled literates a mean of 8.26 ($SD = 2.5$) words, $t(25) = 1.6$, *ns*. TOTs were indeed induced in all three groups. The group data for number of questions correctly answered, TOTs, and Don't know responses are presented in Table 1. Within each group some participants did not generate any TOTs: 5 of the 15 illiterates (including the two who did not speak Spanish), 4 of the 12 ex-literates, and 7 of the 15 schooled literates.

The mean TOT resolution rates for illiterates were .72 for initials and .23 in the repetition condition; for unschooled literates, the rates were .68 and .30 respectively, and for schooled literates, they were .75 and .43 respectively. Using a one-tailed sign test separately for each group showed that significantly more TOTs were resolved by the target's initial than by repetition of the question for the illiterates and the unschooled literates (both ps $< .05$), but not for the schooled literates. For illiterates, seven of nine untied observations favoured the initials condition and, for unschooled literates, seven of eight untied observations favoured the initials condition. For schooled literates there were only five participants for whom there was a difference in resolution rate between the two conditions, giving only a weak test: three out of five of these favoured initials.

The key finding here is that TOTs were found for all three groups. It is not meaningful to compare the groups' TOT rates or the proportion of participants in each group who experienced at least one TOT because these measures are likely to simply reflect different levels of exposure to the target names, rather than intrinsic propensity to experiencing TOTs.

Despite probing by the experimenter, participants reported very little partial knowledge of word targets. It was also apparent that a forced choice procedure would not be acceptable to the participants: in piloting we found that forcing people to choose whether a missing name was short or long, for example, was so unusual that it was socially awkward for the tester to insist on an answer. Typically a request to say what the missing name sounded like was greeted with the reflection that ''I can't recall the word but maybe I will recall it later''. On only 3% of TOTs was partial knowledge of the target produced: Five participants, with all three groups represented, each responded correctly to a probe from the experimenter about whether the word was short or long. Other types of information were provided spontaneously: On 14% of TOTs, additional semantic information about the target was provided, and on 20% participants said something about the target person, e.g., ''I can't stand him''. But on 68% of TOTs the questions produced no response.

Discussion

This study showed that speakers of a language that does not have an expression for ''tip-of-the-tongue state'' do experience TOTs. They report them when trying to recall names, and they indicate frustration when not being able to recall the name. Furthermore, the fact that providing the initials facilitated retrieval tends to suggest that the participants were indeed close to the phonology of the target name, rather than in an illusory TOT or just acquiescing.

On the other hand, despite concerted attempts to get participants to indicate the length of the

TABLE 1
Naming performance (*SD*) in Experiments 2 and 3

	Correct	*TOT*	*Don't know*	*Incorrect*
Illiterates	.48 (.17)	.16 (.11)	.21 (.12)	.15 (.08)
Unschooled literates	.50 (.16)	.22 (.12)	.19 (.11)	.09 (.10)
Schooled readers	.70 (.22)	.11 (.13)	.11 (.07)	.08 (.06)
University students	.73 (.15)	.07 (.09)	.16 (.08)	.04 (.06)

name they were blocking on, or any information about letters in it, they were unwilling or unable to do so. Indeed some of the responses seemed to indicate a metamemorial belief that there could be no such thing as partial knowledge: ''I am telling you that I can't remember the name'', ''Now I have forgotten [the name]. I might remember it later''. In this regard, the TOTs in this study appear less ''rich'' than those in previous Western studies. In Brown and McNeill's study, for instance, participants in TOTs produced partial information regarding number of syllables and the positions of letters.

Interestingly, partial information was absent in all three groups, and is thus not bound specifically to illiteracy. In contrast to the vast majority of studies on TOTs, few of the schooled literates in this study had any post-school education. The possibility that partial knowledge in TOTs would be observed for a sample of Q'eqchi' university students was tested in Experiment 3.

EXPERIMENT 3

Method

Participants. A total of 50 students from a variety of disciplines were recruited from the campus of CUNOR (Centro Universitario Del Norte), the branch of Universidad San Carlos in Cobán. All were Q'eqchi'/Spanish bilinguals. They had a mean age of 27 years old (range: 19–44) and 19 were women.

Stimuli. In addition to the 24 questions used in the previous study, 24 more questions were prepared, with the names of people likely to be known to university students and possibly to induce TOTs, e.g., politicians from Guatemala and other countries, historical figures, and sports stars.

Procedure. The procedure was the same as Experiment 2, apart from the additional questions and the location.

Results

The proportions of responses to the questions are presented in Table 1. TOTs were successfully generated in 42 participants. On 41% of TOTs some partial knowledge about unretrieved word targets was reported, as asked for in the instructions. On 47 TOTs sound information was produced, e.g., initial letter, rhymes. Of the 36 initial letters that were reported, 11 were for first names and 25 for surnames, and 21 (58%) were correct, clearly above chance levels. An indication of word length was given for 25 TOTs, usually ''short name'' or ''long name''. However, while these were broadly correct, it is also possible that these reports of word length are not in fact due to partial lexical access, but rather to reliance on the fact that Mayan surnames tend to be monosyllabic and ''ladino'' names polysyllabic. TOT resolution occurred on 68% of occasions after presentation of the person's initials, and 21% of occasions after repetition of the question: For the 29 participants where the proportions of TOT resolution were different for initials and repetition, 24 were in favour of initials, $p < .05$.

GENERAL DISCUSSION

The data in this paper set limits on the idea of universality of TOTs. First, we think our data make it clear that it is best to distinguish between the universality of an *expression* for tip-of-the-tongue state and the universality of the *phenomenology* of a TOT, because the indigenous Guatemalan language Q'eqchi' appears not to have an expression for tip-of-the-tongue state, and yet its speakers report experiencing the phenomenology. Further, two experiments showed that the TOTs experienced were objective, in the sense that they could reliably be resolved by the presentation of the initials.

In the absence of a TOT expression, temporarily unretrievable words did not appear to be on the tongue, but more generally in the head or the mind. This result tends to suggest that if, as Schwartz claims, speakers of certain languages actually feel like they have a word on their tongue, then this is probably caused by the expression, rather than the other way around.

We would argue that the absolute numbers of TOTs generated in these experiments is not a central issue here. Rather, the key finding is that TOTs can be generated at all in speakers of a language that is largely unwritten, including some who are illiterate. Similarly, a between-groups comparison of how many participants experienced TOTs is not informative, due to the confound with question difficulty: If a question is too easy or too difficult for a particular person,

it will not generate a TOT, so that any differences between groups in TOT rate may be due to the level of question difficulty rather than the inherent propensity for experiencing TOTs. The same argument applies to a comparison with the proportion of participants who experience TOTs in Western studies: the issue of item difficulty makes a comparison uninterpretable. Nonetheless we report the number of participants in each group who failed to experience a TOT for the sake of completeness.

Schwartz (1999, 2002) made the claim of universality in the context of cultures and languages. It is also interesting to examine it in relation to age. It is currently unknown by what age the tip-of-the-tongue state expression becomes widely known among children, but it is clear that preschool children do not know it. But what about TOT phenomenology: Do younger children experience TOTs? The psycholinguist Elbers (1985) recorded a TOT in her 2-year-old son, who in the course of several conversations with his mother actively searched for the phonology of the Dutch word for ''dolphins'', while repeatedly retrieving the phonologically quite distinct word for ''soldiers''. The fun nature of the interaction between mother and son is evident, and it is obvious that the child is in an environment that fosters metalinguistic awareness. In other words, in such surroundings Cornoldi's (1998) metacognitive attitude is encouraged and even 2-year-olds can wilfully explore their lexicons, and demonstrate the first signs of metamemory, because crucially the prerequisite urge to explore and reflect on one's own cognition can be inculcated. This study indicates that TOTs might arise relatively soon after the lexicon gets established, and that the phenomenology can be experienced many years before the ''tip-of-the-tongue'' expression is learned. In a study of feeling-of-knowing judgements, Wellman (1977) also found evidence for some TOTs in preschool children, but this was not the direct focus of the investigation. It would be fascinating to track the emergence of TOTs in children. In particular, such a study might shed some light on whether TOTs are best seen from the psycholinguistic or the metacognitive perspective, by asking whether they are associated more with the development of lexical retrieval or with the development of metacognition.

In the literature on TOTs and ageing, the most reliable finding is that older adults experience more TOTs than younger adults. Another result with much support is that increasing age appears to reduce access to partial information about unretrievable word targets (see Schwartz & Frazier, 2005, for a review). From the first result it is evident that TOTs do not disappear with age: TOT experiences can be observed in young children and appear to increase over the lifespan. The second finding is reminiscent of our result in Experiment 2 above, and makes one wonder whether the reduction in partial knowledge has similar causes in each case. We would argue, however, that they are unlikely to have the same origin. The best account of the lower amount of partial knowledge in older adults currently comes from the perspective of TOTs as psycholinguistic failure, rather than TOTs as metacognitive inferences. For instance, in Burke, Mackay, Worthley and Wade's (1991) explanation, priming efficiency between semantic and phonological levels of representation is reduced with age, giving rise to more TOTs with no partial target information. But this explanation cannot be applied to our participants in Experiment 2, who were younger adults.

Note also that neither group of literates provided much partial knowledge of unrecalled name targets, so that this absence did not appear to have a direct relation with literacy. One explanation may be that participants were reticent in the unfamiliar testing situation, and for reasons of self-presentation may have not wanted to reveal any partial knowledge that they may have had, although this is not the impression we had. Remember that the tester was also Q'eqchi', and the tests were carried out in familiar surroundings. Such an explanation would also beg the question of why participants would be reticent to give partial knowledge, but not to answer all our other questions and perform our other esoteric tasks.

Alternatively, let us consider whether the lack of partial knowledge could be due to a reduced amount of knowledge the participants had about the topics that the questions asked about. It is likely, for instance, that on average our participants knew less about, say, George W. Bush than the average Western participant. However, following consensual psycholinguistic models, where the name is stored at the phonological level of representation and separate from semantic representations, the amount of information at the semantic level is not crucial for access to the name. The seminal model of person identification put forward by Bruce and Young (1986) claims

that the essence of who a person is must be accessed in order to access the name, which in the case of a famous person would normally be the person's profession (see Brennen, David, Fluchaire, & Pellat, 1996; Hodges & Greene, 1998; and Brennen, 1999, for a discussion of this issue). So we would argue that a lower amount of semantic knowledge would not cause our participants to retrieve less partial knowledge.

On the other hand, consider being introduced to a person with a name you have never heard before. During learning, the phonological representation is incomplete, and it is possible that in some cases, however long one was given to try to recall the name, one would not be able to do so, and may not be able to pick it out from similar alternatives on a recognition test. Such a state would not qualify as a TOT because the name is simply irretrievable, regardless of whether you remembered specifying semantic information about the person. However, there is nothing to suggest that this situation would be the case very often in our Experiment 2. The fact that, overall, the name's initials resolved TOTs suggests that the phonological representations are complete on enough occasions. In sum, while the participants may not have had rich semantic knowledge of all of the target people, the cueing result provides evidence that the representations of the names were sufficiently complete, and that an explanation of the lack of partial knowledge must therefore be found elsewhere.

It seems to us that the lack of partial knowledge might best be explained by the concept of epistemic curiosity. Participants agreed to take part in the study and to answer our questions; they were willing to try to answer the questions, but when not able to retrieve a name immediately they generally seemed to want to go to the next question. There were few occasions when a participant indicated frustration with not being able to recall an answer (cf. Schwartz et al., 2000). Thus we would speculate that many of the participants in Experiment 2 were not in the habit of reflecting on failed lexical access, and thus that they had low metacognitive attitude, at least with regard to word finding. This raises an apparent contradiction because the schooled literates had a mean of 13 years of schooling during which metacognitive skills were presumably encouraged. Perhaps when living in a community that until recently has been largely illiterate, the demand for exactly correct responses in naming tasks is not present—general knowledge quizzes are not widespread, for example—and thus that even if this skill is reinforced in school it is not subsequently reinforced in the community, which might, for instance, lead to low motivation to recall names exactly.

On a recursive metamemorial note, the answer to the question ''What was the name of the indigenous leader who was tortured to death at a young age in 1815?'' is in fact Manuel Tot, a statue of whom is to be found in Cobán's main square. On three occasions his name ended up on the tip of a participant's tongue (as far as we can tell).

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