Tantalizing the Tongue: Effect of Arousal and Mood on TOTs

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Abstract

Inferential models suggest that TOTs are the result of inferences about the inevitability of target retrieval from a variety of stimulus clues (Schwartz, 2010). Schwartz and colleagues have investigated emotion as an inferential cue and generally found that it increased TOT rates(see Schwartz, 2001; Schwartz, 2010). The current study investigated the inferential effects of subject mood in addition to stimulus arousal. Forty-six college students were assigned to happy, fearful, or neutral mood induction conditions. Subjects answered 100 TOT-inducing questions, 20 of which were arousing and 80 neutral. Results were consistent with the first hypothesis that arousing questions would produce more TOTs than neutral questions. However, no support was found for the hypothesis that induced mood would increase TOTs. Our data suggest that when subjects have alternative explanations for their arousal they have a weaker inferential basis for reporting TOTs.

Tingling the Tip of the Tongue

William James (1890) once famously described the tip-of-the-tongue (TOT) experience as "tingl[ing] with the sense of our closeness" to a longed-for word. Schwartz (2010) suggested that this tingling, or emotional arousal, may be more than just an effect of unsuccessful word retrieval, but also part of the cause of TOTs themselves. The purpose of the current study is to explore emotion, mood and TOTs.

Theories of TOT

There are two basic categories of TOT theories: Direct-Access and Inferential (Schwartz, 2002). In Direct-Access models TOTs result when target words are activated, but not fully accessible (Schwartz, 2002). Inferential models of TOTs suggest that TOTs result when subjects infer that the target is likely to be stored in their memory based on a variety of clues surrounding the triggering stimulus (Schwartz, 2002).

Emotional Arousal and TOTs

Schwartz and colleagues have found that in general, emotion was associated with increased TOTs (see Schwartz, 2001; Schwartz, 2010 and Schwartz, Travis, Castro, & Smith, 2000).For example, subjects presented with emotionally-charged questions reported more TOTs than they did with neutral questions. Schwartz (2010) argued that the facilitating effect of emotion on TOTs reflects the misattribution of failed target retrieval; subjects interpret their emotional arousal as that tingling feeling James identified, signaling a TOT.

Purpose of Study

The present study explores both the effect of stimulus arousal and subject mood on TOTs. We investigated the effects of emotional valence of the question and the manipulated mood of the subject on TOTs.

Hypotheses

1. Subjects would experience more TOTs with arousing questions (AQs) than neutral questions (NQs).
2. Subjects would experience more TOTs after happy and fearful mood inductions than neutral mood inductions.
3. The interaction of AQs and aroused mood would elicit more TOTs than either variable alone

Arousing Question Example:
"What is the name of the largest Nazi concentration camp in Poland?"
Answer: Auschwitz

Neutral Question Example:
"What is the capitol of Russia?"
Answer: Moscow

Method

Participants

Forty-six college students participated in the study in exchange for academic credit.

Materials

1. Guided imagery vignettes (Mayer, Allen, and Beauregard, 1995). 2. Velten Mood Induction Procedure (1968). 3. Mood-inducing music. 4. Mood assessment instrument (MDBF). 5. 100-item TOT questionnaire (following Schwartz, 2010).

Procedure

Subjects were randomly assigned to three mood induction groups: fearful, happy, and neutral.
Phase 1: Mood was induced in small groups (exposed to mood-inducing music while reading mood-inducing materials).
Phase 2: MDBF administered to assess mood
Phase 3: TOT questionnaire administered.
Phase 4: All subjects given a happy mood induction and debriefed.

Figure 1: Question type effect on TOT %

Figure 2: Mood Effect on TOT %
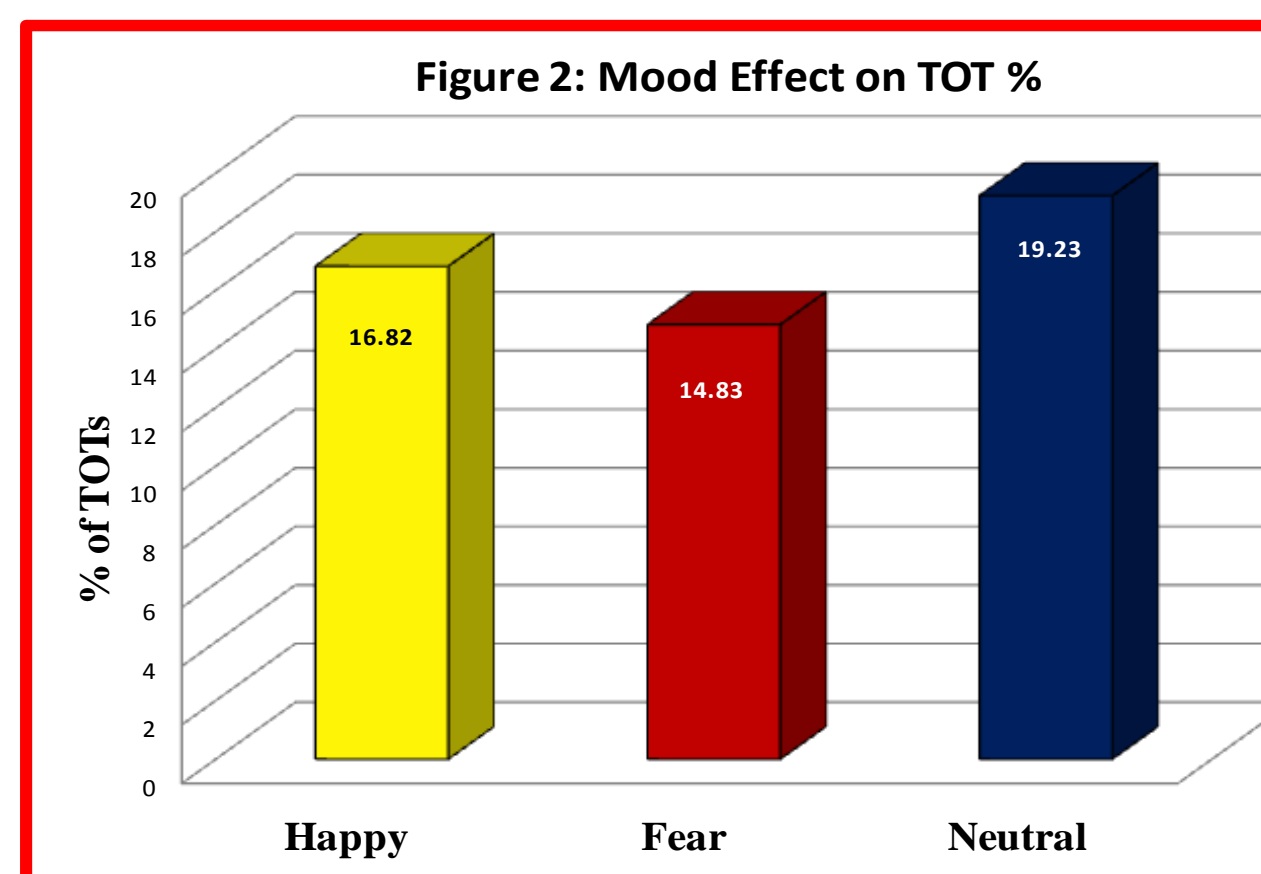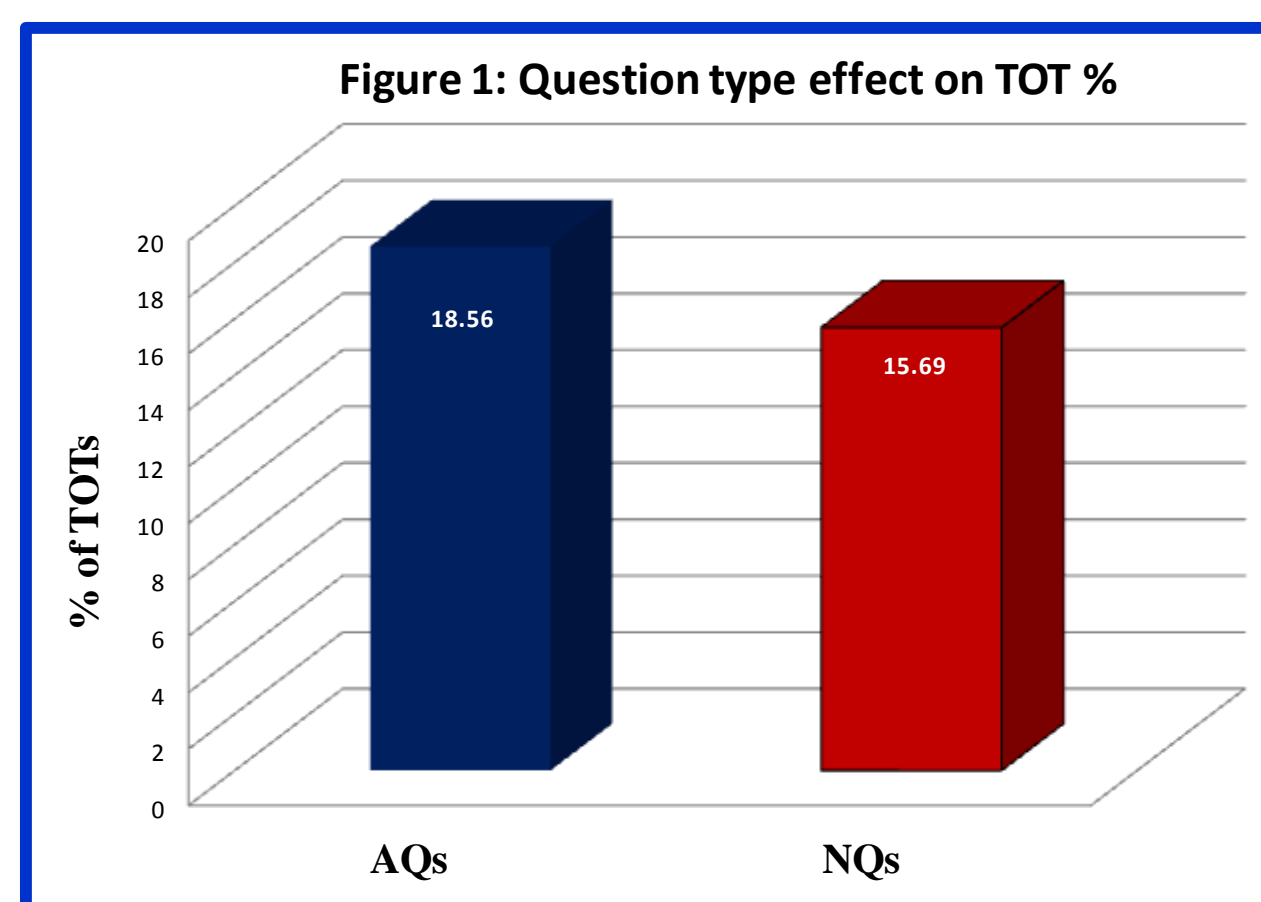
Results

As expected AQs produced a marginally higher percentage of TOTs ($M = 18.56$, $SD = 13.21$) than NQs ($M = 15.69$, $SD = 8.90$); $F(1, 42) = 3.21$, $p = 0.08$ (See Figure 1) . Contrary to our second hypothesis, mood condition did not significantly affect TOTs; neutral condition ($M = 19.23$, $SD = 2.25$), happy condition ($M = 16.82$, $SD = 2.75$); fearful condition ($M = 14.83$, $SD = 2.46$); $F(2, 42) = .88$, $p = 0.423$ (See Figure 2). Contrary to our third hypothesis, AQs did not produce the highest percentages of TOTs in either the happy or fearful mood conditions. Indeed, subject mood reduced TOTs, though this interacted with question arousal differently depending on the mood. Happy mood reduced TOTs for NQs, while fearful mood reduced TOTs for AQs.

Discussion

Our data supports Schwartz's (2010) inferential models, which suggest that TOTs result from the misattribution of emotional cues associated with the stimulus question, interpreted by the subject as evidence that they do know the word and should be able to produce it. We had predicted that subjects in aroused mood conditions (happy or fearful) would also misattribute their emotional arousal as signs of frustrated target retrieval, and so report more TOTs. This was not supported. Interestingly, we found that the interaction of arousing question and fearful mood actually decreased the reports of TOTs.

The results of our study suggest that a critical variable in the experience of TOTs is the attribution that subjects make for the source of frustration associated with retrieval failure. As James said, the tongue tingles in anticipation during a TOT, but if the subject has alternate explanations for this tingling, TOTs are less likely.