

Differences in gesture use during truthful and fabricated account of a self-experience

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Research Questions

- RQ 1: Is there a difference in illustrator use between truth-tellers (TT) and liars (L)?
- RQ 2: Is there a difference in speech patterns between TTs and Ls?

Agenda

- Background
- Literature Review
- Method
- Results
- Discussion

Background—Previous Research

- DePaulo et al.'s (2003) meta-analysis
 - Differences in illustrator use
- Caso et al. (2003)
 - Differences in 7 different types of illustrator use when telling the truth and lying.
- Vrij et al. (2008), DePaulo et al. (2003)
 - Differences in speech patterns during deception

Background

- Embodied Cognition (Kinsbourne, 2006; Wilson, 2002)
- Cognitive Load Theory (Ekman & Friesen, 1972)
- Motor Learning (Cook, Mitchell, & Goldin-Meadow, 2008)

Embodied Cognition

- Deep cognitive and physiological connection between gestures and thought (Wilson, 2002)
- Co-expressiveness & Synchronicity (McNeill, 2005)

Cognitive Load Theory

- Cognitive Load
 - The amount of energy required to control working memory

Cognitive Load Theory

- Cognitive load increases during deception
 - Cognitive multitasking (Vrij et al., 2008)
 - Come up with a credible story (DePaulo et al., 2003)
 - Appear to be convincing (DePaulo et al., 2003)
 - Monitor communicative partner's reaction (Buller & Burgoon, 1996)
 - Keep the story consistent (Vrij, Semin, & Bull, 1996)
- Cognitive Load Theory (Ekman & Friesen, 1972)
 - Cognitive load influences V/NV behavior

Motor Learning

- Gesture use facilitate memory formation
(Cook, Mitchell, & Goldin-Meadow, 2008; Goldin-Meadow Nusbaum, Kelly, & Wagner, 2001)



Method

Hypothesis

- H₁: Liars are more likely use fewer illustrators than truth-tellers.
- H₂: Liars spend longer time to respond.
- H₃: Liars spend more time silence.
- H₄: Truth-tellers talk more than liars.
- H₅: Truth-tellers speak faster than liars.

Method

- Participants
 - $N = 41$
 - $TT = 21$
 - $N = 12F; 18 - 23; (M = 19.52; SD = 1.6)$
 - $L = 20$
 - $N = 12 F$
 - $19 - 23; (M = 19.52; SD = 1.57)$

Study Design / Procedure

- Recruited through SONA
 - 1 research credit
- Two groups: TT / L
 - TT – actually performed task
 - L – only read about performing task
 - Instructed to convince interviewer they performed task regardless

Study Design / Procedure



Study Design / Procedure

- Videotaped Structured Interview
 - Question of interest
 - “Describe in as much detail as possible everything you did once you entered this room.”

Behavioral Coding

- Gestures coded using BACS (Sweet & Pazian, 2008; 2011)
 - 7 subtypes of illustrators (Ekman & Friesen, 1972)
 - Batons, Deictic, Ideographs, Kinetographs, Pictographs, Rhythmic, Spatial
- Inter-rater reliability (% agreement only)
 - 92.7% overall

Transcription

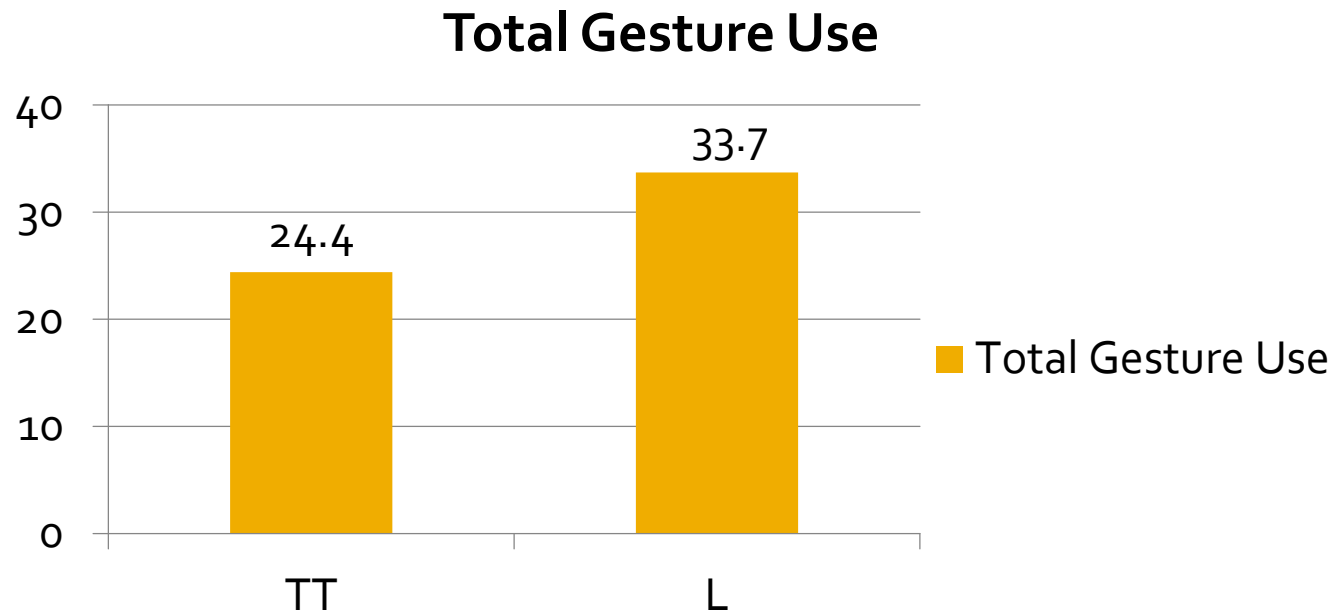
- Response Latency
- Silences
- Word Count
- Speech Rate



Results

Results—Gesture Use

- H₁: Liars are more likely use fewer illustrators than truth-tellers.
 - $F(1, 38), = 1.28, p = .265$

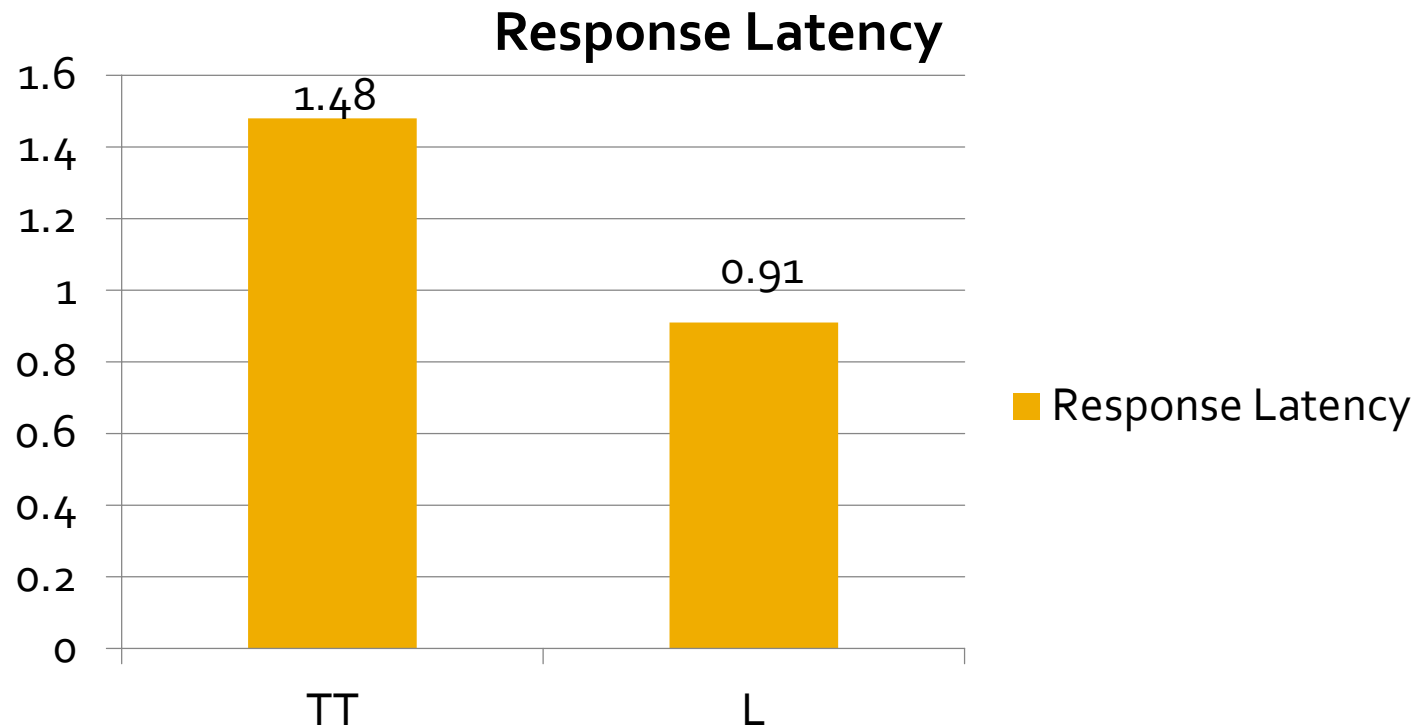


Results—Gesture Use

Variable	Mean(SD)		<i>t</i> (39)	<i>P</i>
	Liars	Truth-tellers		
Baton	8.24(6.1)	7.1(4.2)	.726	<i>n.s.</i>
Deictic	26.2(19.6)	20.2(13.2)	1.16	<i>n.s.</i>
Ideograph	9.1(7.6)	8.6(7.5)	.189	<i>n.s.</i>
Kinetograph	5.9(6.3)	3.4(3.4)	1.59	<i>n.s.</i>
Pictograph	.62(1.1)	.52(1.3)	.181	<i>n.s.</i>
All Gestures	50.1(33.6)	39.8(24.4)	1.12	<i>n.s.</i>

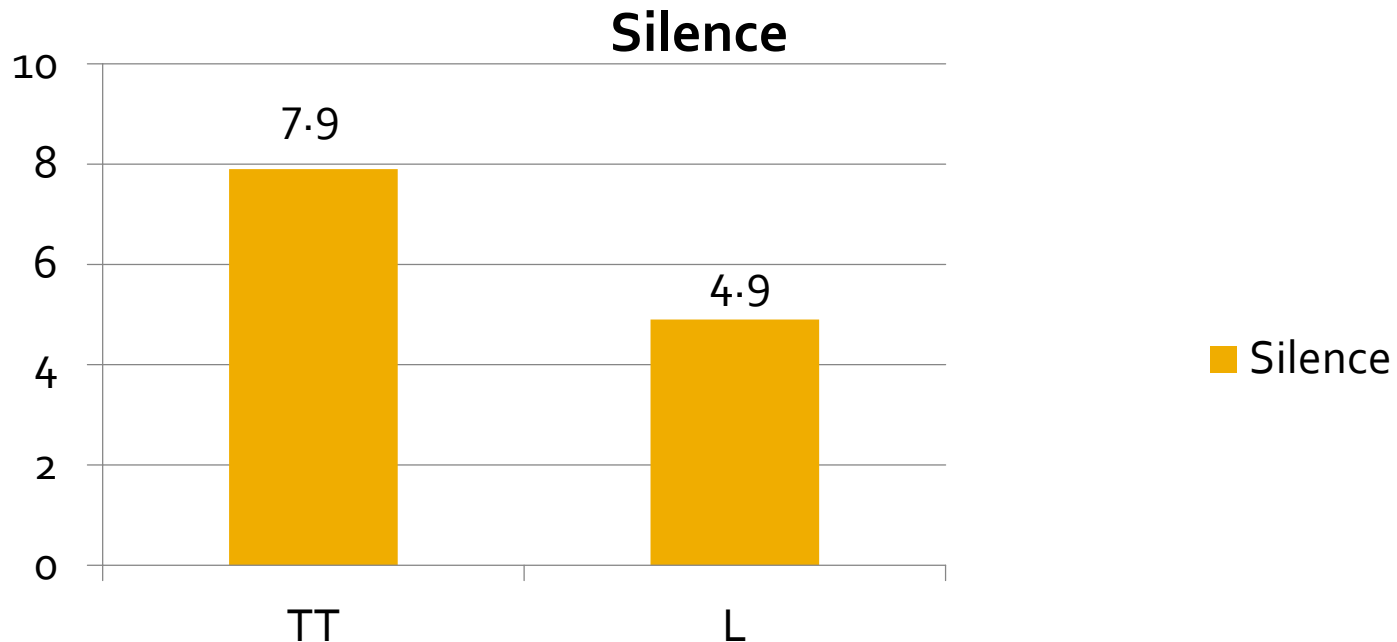
Results—Speech Pattern

- H2: Liars spend longer time to respond
 - $t(266) = -.29, p = .003$



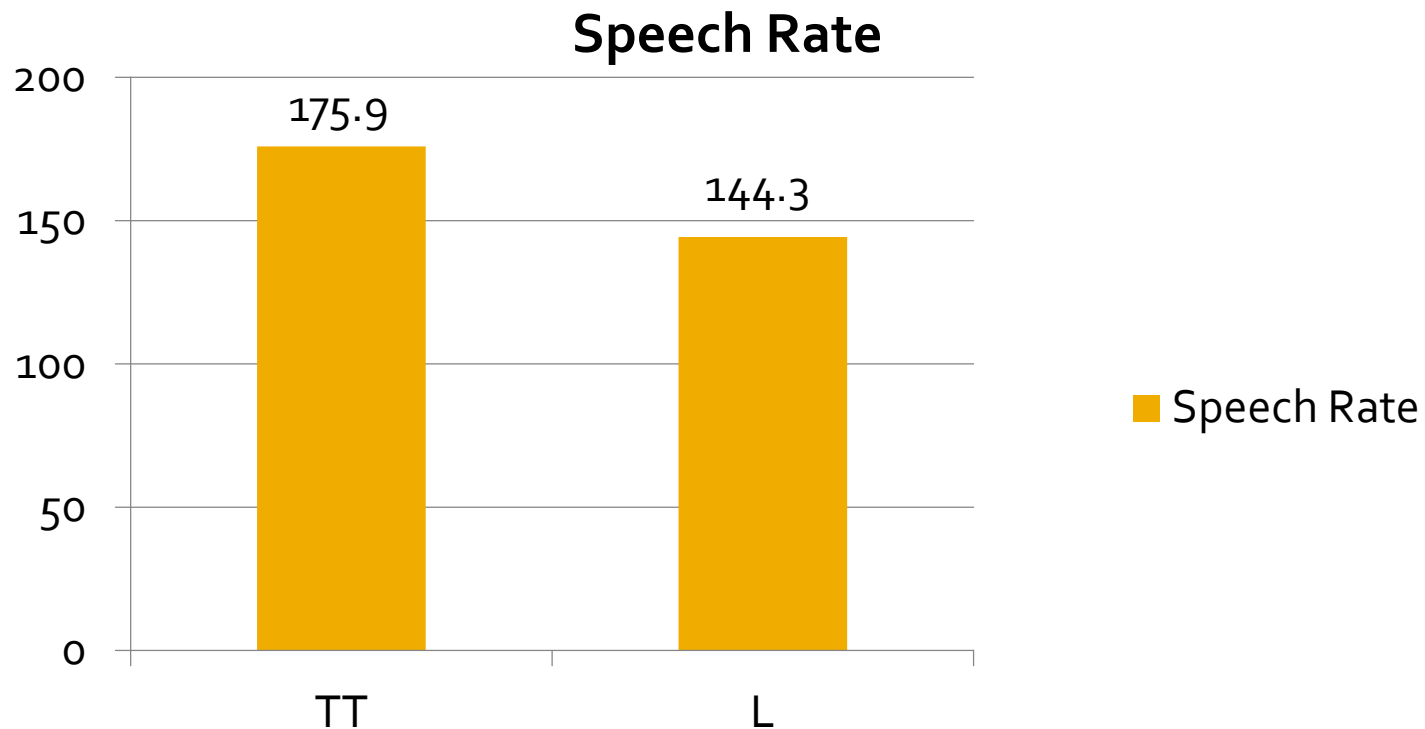
Results—Speech Pattern

- H₃: Liars spend more time in silence than truth-tellers.
 - $t(272) = -2.16, p = 0.03$



Results—Speech Pattern

- H₅: Truth-tellers speak faster than liars.
 - $t(220) = 1.89, p = 0.05$





Discussion

Discussion

- Why Non-Significant Results?
 - Preparedness
 - Small sample size

Discussion

- Why did liar use more illustrators?
 - Low cognitive load (Vrij et al., 2008)
 - Mental rehearsal
 - Lack of understanding about the experiment
 - Low-stake experimental design
 - Self-Presentation Theory (DePaulo, 1992)
 - Purposeful attempt to control one's behavior

Discussion

- Differences in speech patterns
 - TT: Longer response latency & silence
 - Lack of preparedness & Self-presentation (DePaulo et al., 2003)
 - TT: Faster speech rate
 - Actual memory aided their speech (McCormack et al., 2009)
 - L: Fewer word counts
 - Lack of detailed memory (McCormack et al., 2009)

Conclusion

- Despite non-sig results examining behavioral differences is still potentially promising
 - Larger means for movements produced by liars suggest there is something there
- Follow up study
 - larger sample size
 - modify experimental design
- Long-range research could help inform law enforcement more quickly recognize those who are falsely confessing