PSYCHONOMIC SOCIETY
63RD ANNUAL MEETING
BOSTON, MASSACHUSETTS, USA & ONLINE
NOVEMBER 17-20, 2022

10.20378/irb-56855

IAT Faking Indices Revisited: Aspects of Replicability and Differential Validity

Jessica Röhner[1], Ronald R. Holden[2], & Astrid Schütz[1]
[1]University of Bamberg, Germany & [2]Queen's University, Canada

RESEARCH OBJECTIVE

Theoretical Background

- Indices [slowing, speeding, increasing or reducing errors in congruent or incongruent blocks; Combined Task Slowing (CTS); Ratio 150-10000] allegedly detect faking in IATs
  (Agosta et al., 2011; Cvencek et al., 2010; Röhner et al., 2013)

Faking Strategies and Faking Indices

IAT block	Faking goal	
	Low scores	**High scores**
Faking indices that are based on conceptually derived faking strategies (Röhner et al., 2013)		
Congruent	*Slowing down on the congruent block* (i.e., Slow_Co; difference in reaction time between the congruent block under faking and the congruent block at baseline) *Increasing errors on the congruent block* (i.e., IncErr_Co; difference in errors between the congruent block under faking and the congruent block at baseline)	*Acceleration on the congruent block* (i.e., Accel_Co; difference in reaction time between the congruent block at baseline and the congruent block under faking) *Reducing errors on the congruent block* (i.e., RedErr_Co; difference in errors between the congruent block at baseline and the congruent block under faking)
Incongruent	*Acceleration on the incongruent block* (i.e., Accel_In; difference in reaction time between the incongruent block at baseline and the incongruent block under faking) *Reducing errors on the incongruent block* (i.e., RedErr_In; difference in errors between the incongruent block at baseline and the incongruent block under faking)	*Slowing down on the incongruent block* (i.e., Slow_In; difference in reaction time between the incongruent block under faking and the incongruent block at baseline) *Increasing errors on the incongruent block* (i.e., IncErr_In; difference between the incongruent block under faking and the incongruent block at baseline)
Faking indices that are based on slowing behavior		
Faster and slower	*CTS* (i.e., difference between the slower IAT block under faking and the faster IAT block under non-faking; Cvencek et al., 2010)	
Single and faster	*Ratio 150–10000* (i.e., ratio between the faster IAT block and the single IAT blocks under faking; Agosta et al., 2011)	

Table 1 Faking strategies and indices. The content of this table is reprinted with permission from the publisher of Röhner et al. (2013) (https://doi.org/10.1016/j.jrp.2013.02.009) under the CC-BY license (license number 5396380248068). Headers were amended according to this publication's content.

Shortcomings and Open Questions

- Studies are inconclusive and statistically underpowered
- Results' stability, indices' unique predictivity, and variations in computing faking success are unexplored

Hypotheses

1) *Faking detection in faking low and in faking high conditions would differ with respect to the faking indices*. Faking low is shown by Slow_Co, IncErr_Co, and CTS. Faking high scores is shown by Accel_Co. However, given the low power of previous research, we surmised that findings from a highly powered test may provide somewhat different results, especially concerning faking high (faking effects are typically smaller for faking high; e.g., Röhner et al., 2011).

2) *Not all strategies that are implemented by fakers are successful*. The results for faking low need to be replicated. We expect the following: Slow_Co and CTS should be more strongly related to faking success than to repeated measurement effects. For faking high: Slow_In and CTS would be positively related to faking success, whereas IncErr_In would not. Slow_In and CTS should be more positively related to faking success than to effects of repeated measurement.

3) *Faking indices would show stability*: Faking indices that correctly classified whether participants belong to the faking group or to the control group in the overall data set would also correctly classify whether participants belong to the faking group or to the control group in subsamples (and vice versa).

4) *Increasing errors on the congruent block and on the incongruent block will have the most impact on faking detection*, including unsuccessful faking attempts (Röhner et al., 2013). We expect the other indices to have only small or even a negative impact on faking detection (Röhner et al., 2013).

METHOD

Participants and Data Sets

- Three data sets with extraversion IATs
- Final sample: 750 participants (258 faking low, 245 control, 247 faking high; 576 women, 173 men, 1 no response; 744 students); average age of 22.05 years (*SD* = 4.07)

Procedure

- Participants took part in exchange for feedback and/or partial credit
- In all studies, participants completed the extraversion IAT twice
- On the first occasion (i.e., baseline), participants completed the IAT under standard instructions
- On the second occasion, participants were randomly assigned to one of three conditions (i.e., control, faking high scores, or faking low scores)
  - ➢ Participants in the control condition again responded under standard instructions on the IAT
  - ➢ Fakers were asked to fake either high scores or low scores on the IAT according to a personnel selection scenario

Extraversion-IAT (Back et al., 2009)

- Self-relevant words (e.g., I, self) and non-self-relevant words (e.g., they, yours); extraversion-related words (e.g., talkative, active) and introversion-related words (e.g., shy, passive)

Faking Strategies and Faking Indices

- Computed as described in Table 1

Analytical Strategy

- ANOVA with repeated measures on the extraversion IAT *D* scores as a manipulation check to investigate whether participants in the faking groups were able to fake the IAT (was successful)
- ROC curve analyses to evaluate how well each of the strategies predicted whether participants belonged to the control group or a faking group
- Correlation analyses to evaluate how strategies were related to faking success
- Fisher's *z* test (Fisher, 1950) to compare the correlations in the faking groups to those in the control group
- Multiple logistic regression analyses to investigate the unique contribution of each faking index in predicting whether participants belonged to the control group or a faking group

MAIN FINDINGS

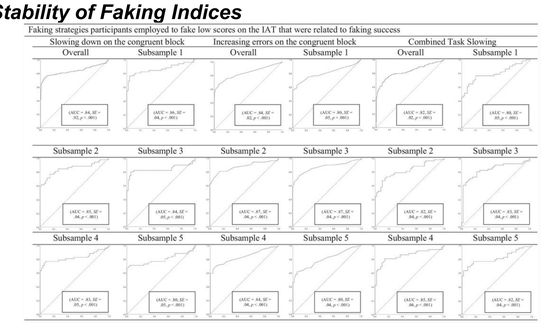
Faking Low Scores

Implementation and Success of Faking Strategies

Faking strategies and indices	Implementation		Correlation with										
			Faking success		Effects of repeated measurement			Faking success		Effects of repeated measurement			
			When computed as *D* change					When computed as Interaction Effect					
	AUC	*SE*	*r*	*p*	*n*	*r*	*p*	*n*	*r*	*p*	*n*	*r*	*p*	*n*
Slowing down on the congruent block	**.84**	.02	**.51**	< .001	253	.36	< .001	241	**.50**	< .001	253	-.03	.686	241
Acceleration on the incongruent block	.37	.03	.41	< .001	256	.47	< .001	243	**.33**	< .001	256	-.07	.308	253
Increasing errors on the congruent block	**.84**	.02	.03	.587	258	.20	.001	243	.04	.580	258	-.13	.050	243
Reducing errors on the incongruent block	.29	.02	**.23**	< .001	258	.05	.422	244	**.24**	< .001	258	-.09	.173	244
CTS	**.82**	.02	**.17**	.006	253	-.11	.089	243	.21	.001	253	.25	< .001	243
Ratio 150–10000	.45	.03	-.12	.055	257	.15	.022	245	-.10	.111	257	-.21	.001	245

*AUC*s in bold indicate that the strategy- or index-classified participants as belonging to the control or faking low group at levels above chance (> .50). Faking success = changes in IAT effects according to faking instructions. Effects of repeated measurement = changes in IAT effects in the control group (i.e., not due to faking instructions). Correlations printed in bold indicate that the significant positive correlation between the relevant faking strategy or faking index and faking success in the faking low group was significantly higher than the correlation between the respective behavior and effects of repeated measurement in the control group according to Fisher's *z* tests at $p < .05$.

Stability of Faking Indices



Unique Predictivness of Faking Indices

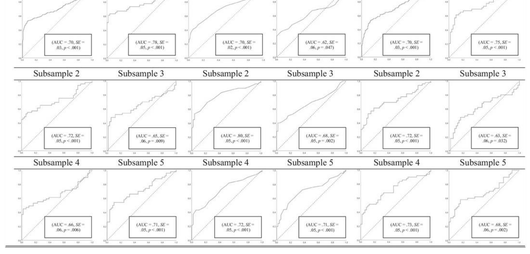
Faking strategies and indices	*B*	95 % CI for odds ratio			*SE (B)*	R^2		
		LL	*Odds ratio*	*UL*		*H-L*	*C-S*	*Na*
						.47	.48	.64
Constant	−0.05	0.11	0.95	8.50	1.11			
Slowing down on the congruent block	0.01***	1.00	1.01	1.01	0.00			
Increasing errors on the congruent block	0.22***	1.14	1.25	1.39	0.05			
CTS	0.00	1.00	1.00	1.00	0.00			
Ratio 150–10000	−1.14	0.04	0.32	2.37	1.03			
Acceleration on the incongruent block	0.00	1.00	1.00	1.00	0.00			
Reducing errors on the incongruent block	−0.18***	0.75	0.83	0.92	0.05			

CI = confidence interval; *LL* = lower limit; *UL* = upper limit; *H-L* = Hosmer-Lemeshow; *C-S* = Cox-Snell; *Na* = Nagelkerke; Model $\chi^2(6) = 329.94$, $p < .001$. ***$p < .001$

Faking High Scores

Faking strategies and indices	Implementation		Correlation with										
			Faking success		Effects of repeated measurement			Faking success		Effects of repeated measurement			
			When computed as *D* change					When computed as Interaction Effect					
	AUC	*SE*	*r*	*p*	*n*	*r*	*p*	*n*	*r*	*p*	*n*	*r*	*p*	*n*
Slowing down on the incongruent block	**.70**	.02	**.64**	< .001	246	.47	< .001	243	**.53**	< .001	246	-.07	.308	243
Acceleration on the congruent block	.51	.03	.41	< .001	244	.36	< .001	241	**.15**	.019	244	-.03	.686	241
Increasing errors on the incongruent block	**.70**	.02	**.37**	< .001	246	.05	.422	244	**.37**	< .001	246	-.09	.171	244
Reducing errors on the congruent block	.49	.03	.16	.016	236	.20	.001	243	**.19**	.004	236	-.13	.050	243
CTS	**.70**	.02	**.36**	< .001	246	.11	.089	243	**.50**	< .001	246	-.25	< .001	243
Ratio 150–10000	.43	.03	-.13	.050	245	-.15	.022	245	-.25	< .001	245	.21	.001	245

*AUC*s in bold indicate that the strategy or index classified participants as belonging to the control or faking high group at levels above chance (> .50). Faking success = changes in IAT effects according to faking instructions. Effects of repeated measurement = changes in IAT effects in the control group (i.e., not due to faking instructions). Correlations printed in bold indicate that the significant positive correlation between the relevant faking strategy or faking index and faking success in the faking high group was significantly higher than the correlation between the respective behavior and effects of repeated measurement in the control group according to Fisher's *z* tests at $p < .05$.



Faking strategies and indices	*B*	95 % CI for odds ratio			*SE (B)*	R^2		
		LL	*Odds ratio*	*UL*		*H-L*	*C-S*	*Na*
						.20	.24	.32
Constant	0.39	0.18	1.48	12.50	1.08			
Slowing down on the incongruent block	0.00	1.00	1.00	1.00	0.00			
Increasing errors on the incongruent block	0.16***	1.09	1.17	1.27	0.04			
CTS	0.00	1.00	1.00	1.00	0.00			
Ratio 150–10000	−1.10	0.05	0.33	2.40	1.01			
Acceleration on the congruent block	0.00	1.00	1.00	1.00	0.00			
Reducing errors on the congruent block	−0.06	0.86	0.94	1.02	0.04			

CI = confidence interval; *LL* = lower limit; *UL* = upper limit; *H-L* = Hosmer-Lemeshow; *C-S* = Cox-Snell; *Na* = Nagelkerke; Model $\chi^2(6) = 136.89$, $p < .001$. ***$p < .001$

Results in a Nutshell

1) Fakers use different faking strategies when faking low scores than when faking high scores
2) Not all faking indices are successful at levels above chance
3) Results are stable with respect to subsamples
4) Increasing errors impacts faking detection most strongly
5) Not all behaviors that revealed faking were successful in changing IAT effects as desired
6) Not all behaviors that were successful in changing IAT effects as desired revealed faking

CONCLUSION AND IMPLICATIONS

- Apparently, fakers use goal-dependent strategies which are not necessarily successful
- To detect faking, we recommend combining indices and considering the context

ACKNOWLEDGMENTS

This research was partly funded by a grant from the equal opportunities office at the University of Bamberg. The funding source had no involvement in the study design or analyses.

MAIN REFERENCES AND CONTACT INFORMATION

Agosta, S., Ghirardi, V., Zogmaister, C., Castiello, U., & Sartori, G. (2011). Detecting fakers of the autobiographical IAT. Applied Cognitive Psychology, 25, 299–306. https://doi.org/10.1002/acp.1691
Cvencek, D., Greenwald, A. G., Brown, A. S., Gray, N. S., & Snowden, R. J. (2010). Faking of the Implicit Association Test is statistically detectable and partly correctable. Basic and Applied Social Psychology, 32, 302–314..
Röhner, J., Schröder-Abé, M., & Schütz, A. (2013). What do fakers actually do to fake the IAT? An investigation of faking strategies under different faking conditions. Journal of Research in Personality, 47, 330–338. https://doi.org/10.1016/j.jrp.2013.02.009
The paper to this poster can be retrieved here: Röhner, J., Holden, R.R. & Schütz, A. IAT faking indices revisited: Aspects of replicability and differential validity. Behav Res (2022). https://doi.org/10.3758/s13428-022-01845-0

Contact: Dr. Jessica Röhner, Department of Psychology, University of Bamberg, Germany,
E-Mail: jessica.roehner@uni-bamberg.de