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# INDIRECT MEASURES OF ATTITUDES



# Indirect measures of attitudes

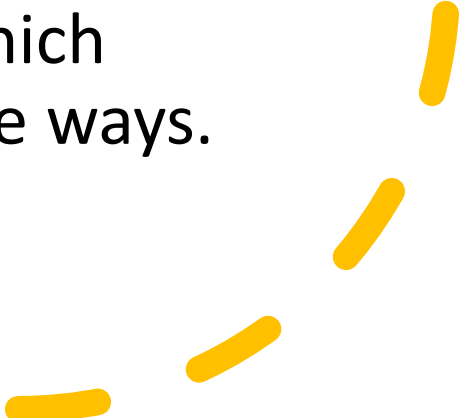
They have proven useful in various and heterogeneous **research fields**, *e.g.*

- social and personality psychology (see, *e.g.* Gawronski & De Houwer, 2014),
- political psychology (Frieze, Smith, Koeber, & Bluemke, 2016; Zogmaister, 2017),
- health psychology (Sheeran, Bosch, Crombez, Hall, Harris, Papiés, & Wiers, 2016).

The potential opportunities for their use in **applied contexts** are also disparate, *e.g.*

- organizational psychology (Uhlmann et al., 2012),
- psychopathology (Roefs et al., 2011),
- and consumer cognition (Dimofte, 2010).

# What are indirect measures of attitudes

- *Different from traditional self-report questionnaires*, respondents do not directly describe their feelings, evaluations, or opinions:
  - they perform tasks in which attitude-relevant stimuli are involved, and their attitude is indirectly inferred from the performance.
  - **The assumption:** objects spontaneously activate evaluative responses, which influence behaviors in predictable ways.
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The IAT (Greenwald et al. 1998)

European Union  
and  
POSITIVE

United States  
and  
NEGATIVE

France

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United States  
and  
POSITIVE

European Union  
and  
NEGATIVE

Alaska

# The IAT

- Two blocks of double binary categorization  
(*critical* tasks, compatible & incompatible)

Press 'E' for	Press 'I' for	
EU & good	USA & bad	compatible
USA & good	EU & bad	incompatible

- Preceded by *simple* blocks (i.e., only one binary categorization, for familiarization)

Block number	Press 'E' for	Press 'I' for
1	EU	USA
2	good	Bad
3	EU & good	USA & bad
4	USA	EU
5	USA & good	EU & bad

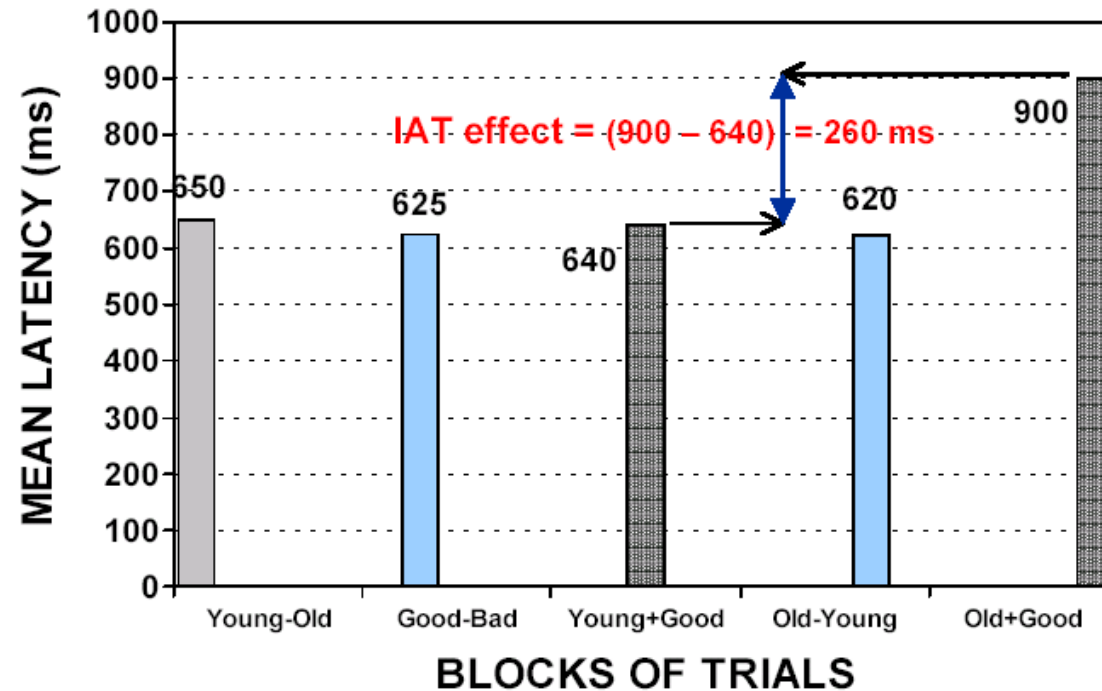
# The IAT

- Basic idea:

when the key mapping in the task is compatible with a participant's preference quick and accurate responses are facilitated

- when the key mapping is preference-incompatible (e.g., EU-negative; USA-positive, for a citizen of EU) performance is impaired.

# IAT Effect Computation



**Based on difference in latencies for the two critical blocks,**  
with a penalization for each error  
and taking into consideration differential speeds of respondents by dividing this  
difference by the standard deviation  
(for details regarding the scoring of IAT data, see Greenwald, Nosek, & Banaji, 2003)

# Evaluative/Affective Priming (sequential priming)

**DELICIOUS**

Instruction: Press 'a' for GOOD, press 'l' for BAD

**Prime:** a stimulus referring to the concepts of interest (e.g. symbols of European Union and of United States)

**Target:** clearly valenced (i.e., 12 positive, e.g. *wonderful* and 12 negative, e.g. *disgusting*) word

**Task:** categorize the words according to valence (good vs. bad)

	Symbol of EU	Symbol of USA
Positive word	Facilitation*	Inhibition*
Negative word	Inhibition*	Facilitation*

\* For a person liking the EU more than the USA



# Fazio et al., 1995:

## Attitude estimates based on facilitation scores

For each participant, score based on the RT in all four conditions

(RT White-Negative *minus* White-Positive)

*minus* (RT Black-Negative *minus* Black-Positive)

*(see original paper for details)*

More positive scores interpreted as higher preference for Whites. [White primes activate more positive responses]

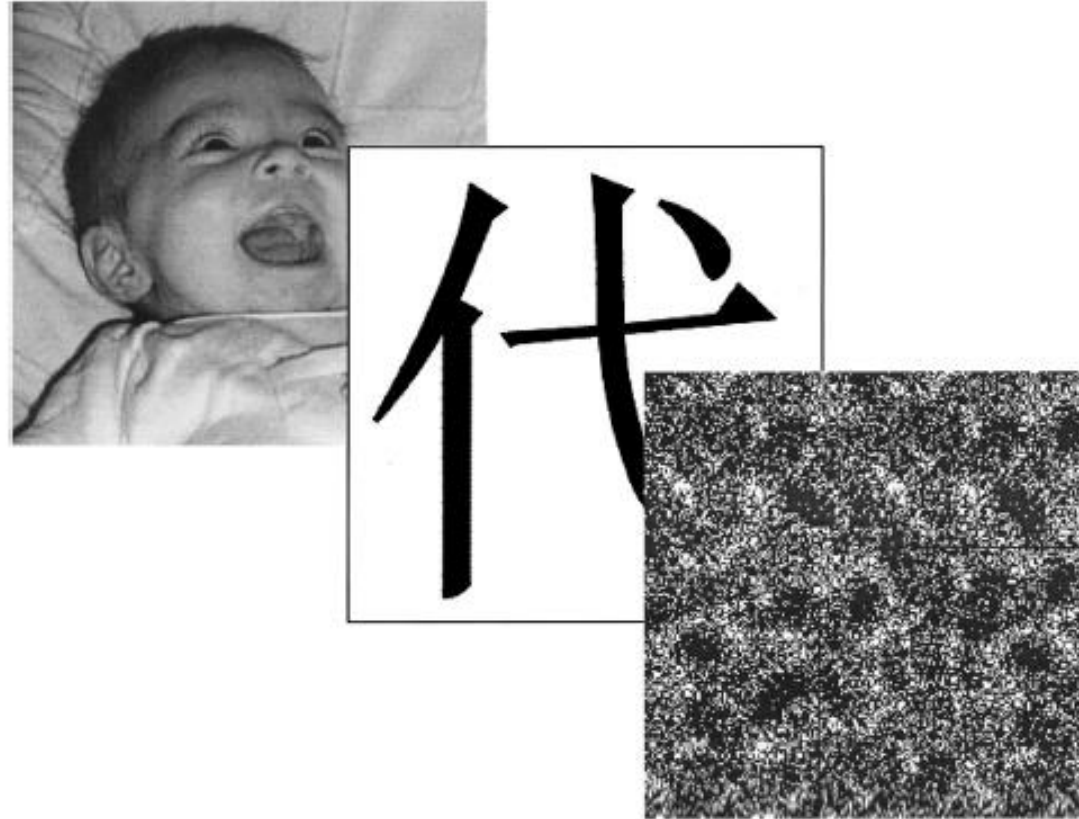
More negative scores interpreted as higher preference for Blacks. [Black primes activate more positive responses]

Results:

- Individual differences in priming score were associated with
  - **uncomfortable** behavior toward an African American partner
  - **Self report measure of prejudice**, but only among those subjects not motivated to control prejudice

# Affect Misattribution Procedure (AMP)

*Payne, Cheng, Govorun, & Stewart, 2005*



Prime: 75 ms,

Mask: 125 ms,

Chinese ideograph: 100 ms.

Mask until response

Response: Binary classification of target pleasant/unpleasant

# AMP

- Systematic variation of prime type
- E.g. Payne et al., 2005, Study 5 – 2004 US Presidential Election
  - 3 prime types: 12 pictures of Bush, 12 of Kerry, 12 grey squares (random order)
  - Each presented twice for a total of 72 trials
  - 72 different ideographs

In the instruction:

- *«It is important to note that the real-life image can sometimes bias people's judgments of the drawings. Because we are interested in how people can avoid being biased, **please try your absolute best not to let the real-life images bias your judgment of the drawings!** Give us an honest assessment of the drawings, regardless of the images that precede them.»*

# Payne e coll. (2005), study 5

Proportion of “pleasant” responses as a function of prime and voting intention.

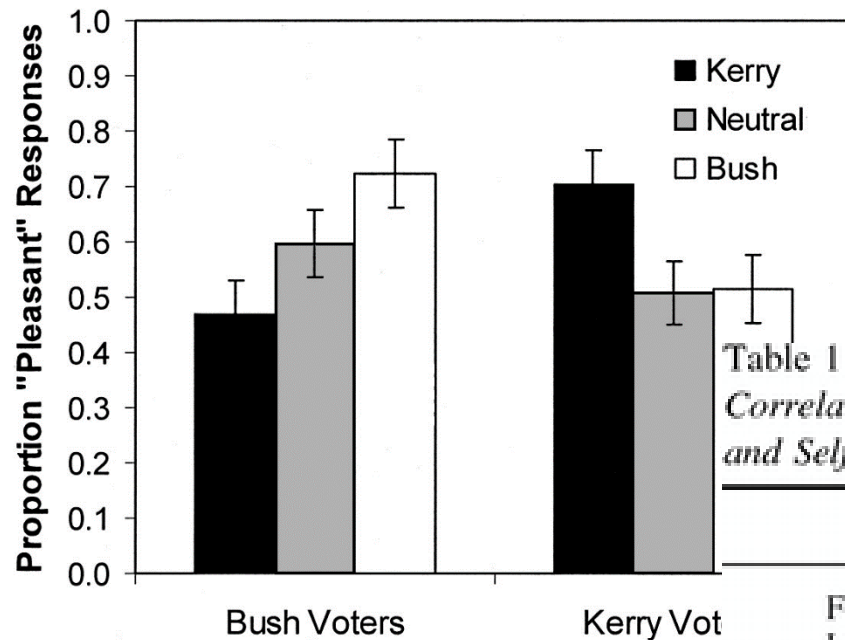


Table 1

*Correlations Between Affect Misattribution Procedure Scores and Self-Reported Attitudes Toward Candidates*

Item	<i>r</i>
Feeling thermometer	.60*
Liking for candidate	.57*
Candidate's competence	.59*
Candidate's morality	.67*
Share candidate's values	.61*
Support candidate's policies	.63*
Support as a candidate	.62*
Overall <i>M</i>	.65*

\*  $p < .01$ .

AMP score: difference between proportion of 'like' responses after *prime* and *baseline*

# What characterizes indirect measures of attitudes:

- The attitudinal object is presented
- But **we do not ask** participants **to report their attitudes** or preferences toward this object (as we would do in a questionnaire)
  - In some cases we even ask 'try to avoid being influenced'
- Nevertheless, we expect that **the spontaneous evaluations or preferences influences some aspects of behavior**
  - Speed, accuracy, or something else
- We infer the attitude from these aspects



# Various indirect measures of attitudes exist, e.g.

- Implicit Association Test (Greenwald, McGhee, & Schwarz, 1998)
- Brief IAT (Sriram & Greenwald, 2009)
- Go/No-Go Association Task (Nosek & Banaji, 2001)
- Single Target IAT (Wigboldus)
- Single Category IAT (Karpinski & Hilton, 2006)
- Personalized IAT (Olson & Fazio, 2004)
- Recoding Free IAT (Rothermund et al., 2009)
- Single Block IAT (Teige-Mocigemba et al., 2008)
  
- Evaluative Priming Task (Fazio et al., 1986)
- Affect Misattribution Procedure (Payne et al., 2005)
  
- Approach-Avoidance Tasks (e.g., Chen & Bargh, 1999; Castelli, Zogmaister, Smith, & Arcuri, 2004)
  
- Implicit Relational Assessment Procedure (Barnes-Holmes et al., 2010)
- Extrinsic Affective Simon Task (De Houwer, 2003)
- Identification Extrinsic Affective Simon Task (De Houwer & De Bruycker, 2007)
- Sorting Paired Features Task (Bar-Anan et al., 2009)
- Implicit Association Procedure (Schnabel et al., 2006)
- Action Interference Paradigm (Banse et al., 2010)
- Evaluative Movement Assessment (Brendl et al., 2005)
  
- Name Letter Task (Nuttin, 1985, 1987; see Lebel et al., 2009)
- Linguistic Intergroup Bias (Maass, Salvi, Arcuri, & Semin, 1989)
- Weapon Paradigm (Payne, 2001; Correll, Park, Judd, & Wittenbrink, 2002)

# Why are these measures interesting?

- they help **circumvent measurement biases due to socially desirable responding and self-deception** (Marlow & Crowne, 1961; Paulhus, 1984)
  - participants have less control on the outcome of the measurement
  - they do not require conscious reflection upon the construct under investigation.
- they are thought to capture **automatic** attitudinal effects
  - Something **different** from what is measured through the traditional self-report questionnaires



## Indirect Measures & Self-Reports

are thought to tap into  
*qualitatively different*  
cognitive processes:

- reflective versus impulsive (Strack & Deutsch, 2004)
- rule-based versus associative (Smith & DeCoster, 2000)
- propositional versus associative (Gawronski & Bodenhausen, 2006)
- spontaneous versus effortful (Fazio, 2007)
- slow-learning versus fast-binding (DeCoster, Banner, Smith, & Semin, 2006)
- ...

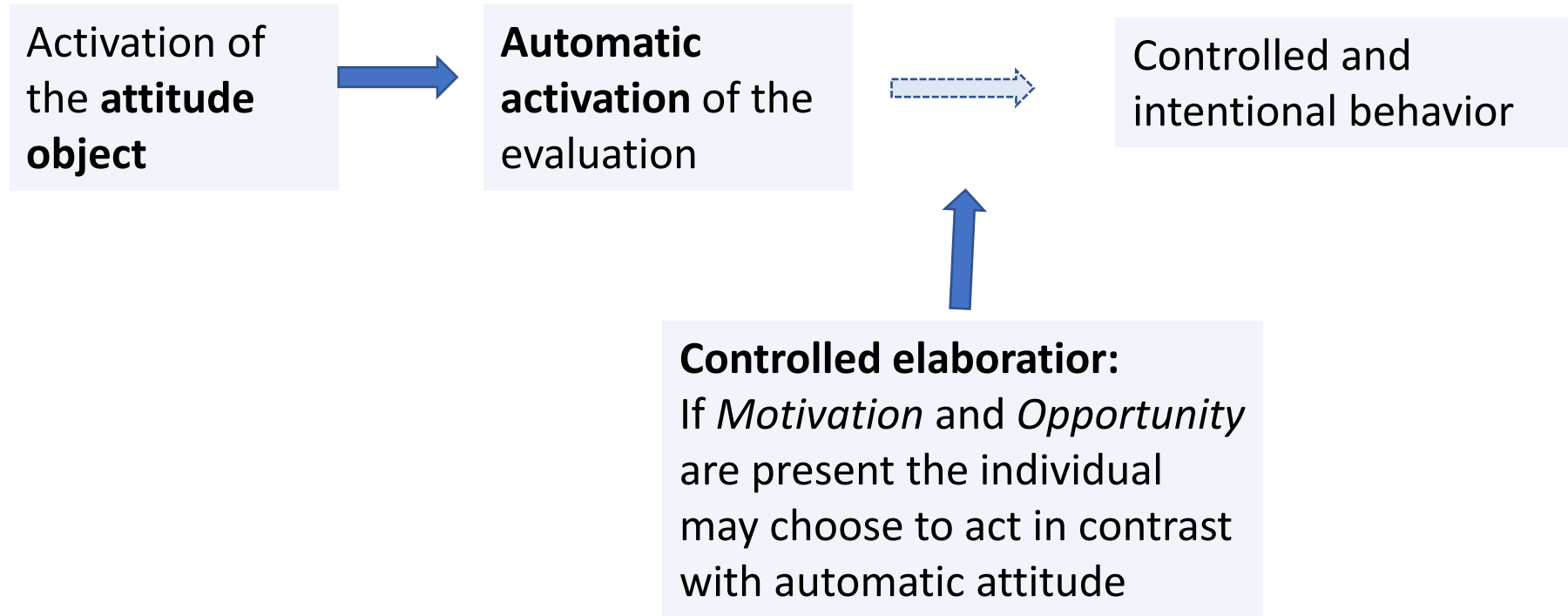
In these dichotomies, one of the two ways is considered as more automatic than the other.

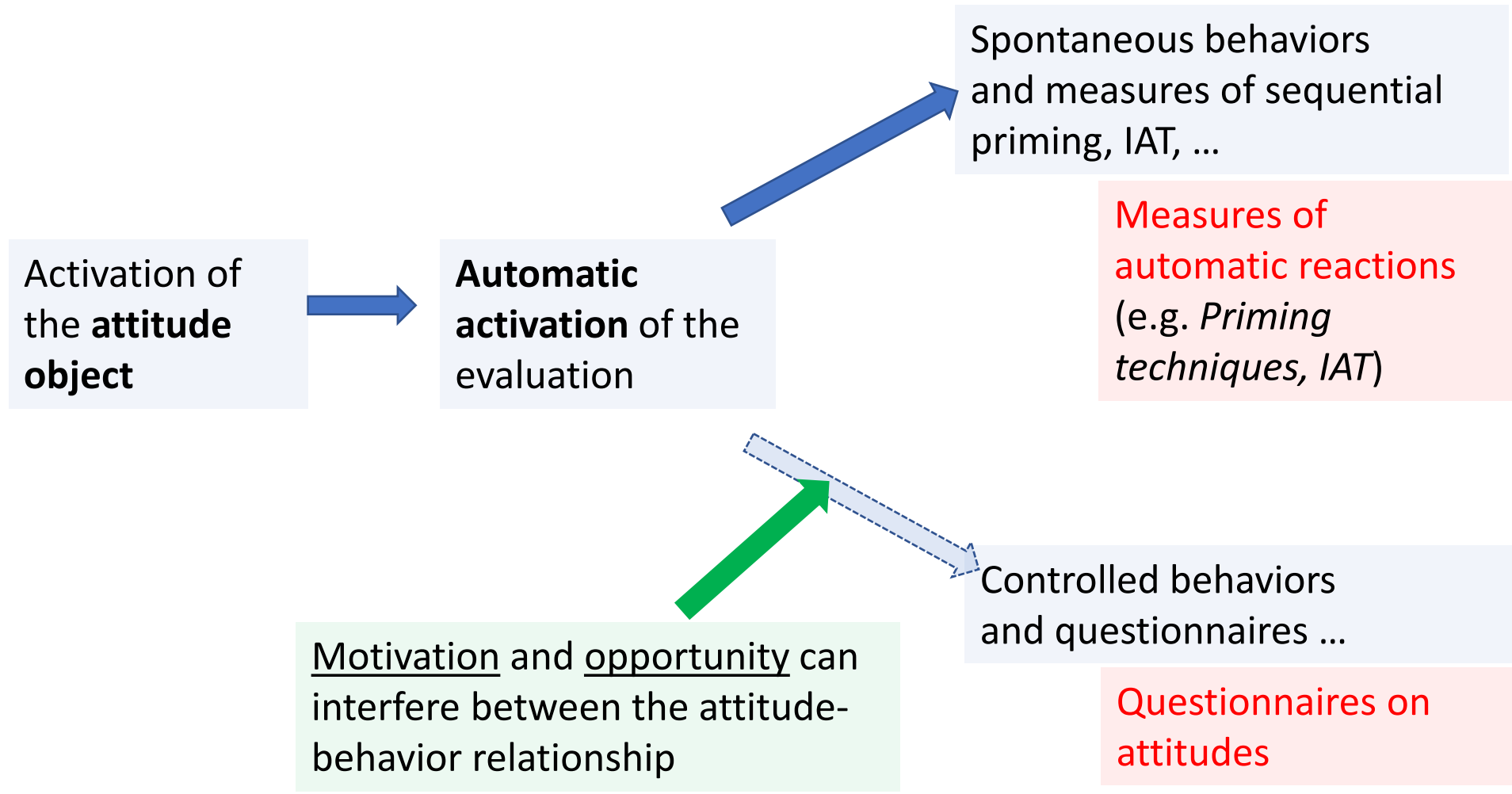
However: do not confuse the conceptual level (*i.e.*, the processes) and the operational level (*i.e.*, the measures)



# Motivation and Opportunity as Determinants (MODE) Model

*Fazio, 1990*





# Attitude strength

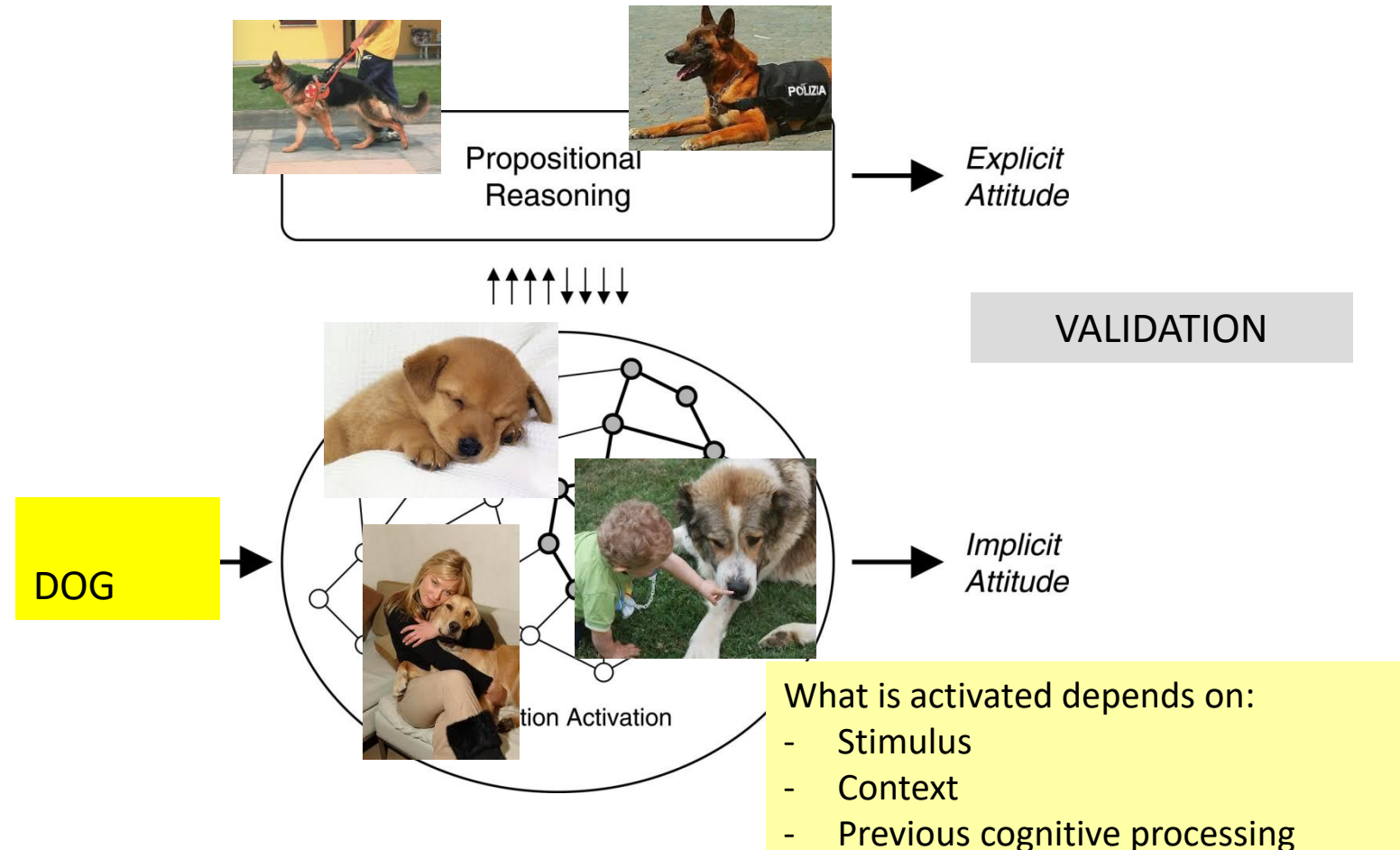
- For **strong** attitudes, **spontaneous** processing occurs
- **Strong** attitudes **affect performance** in tasks or situations where individuals encounter the attitudinal object, but the attitude is irrelevant for what they are doing; hence, they have no compelling reason to take the attitude toward the object into consideration.
- **Indirect measures**, such as the IAT, are precisely such types of tasks (Fazio, 1995, 2007).
- **Weaker** attitudes are less readily activated, as demonstrated by their having a **lower impact** on priming tasks and causing slower responses to questionnaires (see Fazio, 2007).

# Self reports of attitudes

- can be expressions of the automatically activated attitude,
- but with sufficient motivation and opportunity to evaluate, they can also be based on other retrieved information
- among this other information, also weaker attitudes

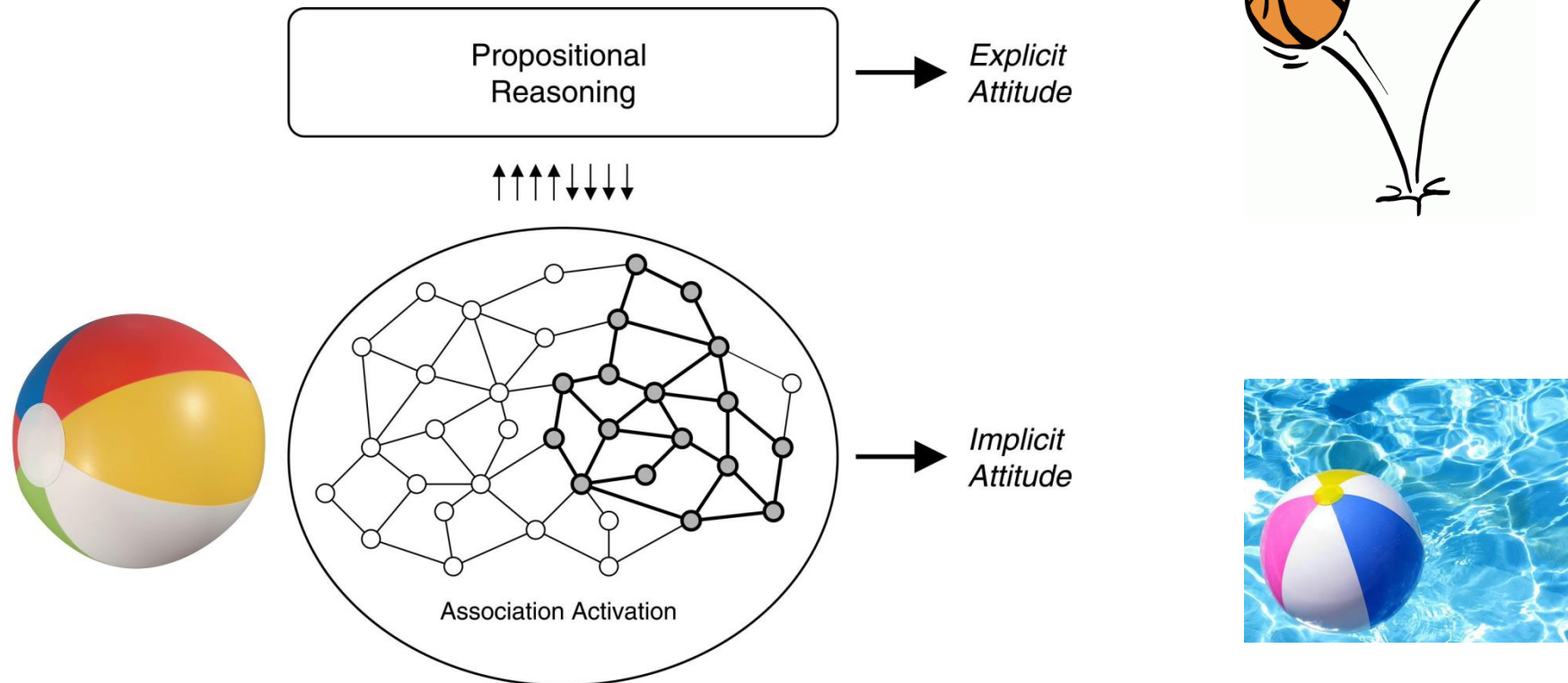
# Associative-Propositional Evaluation (APE) Model Gawronski & Bodenhausen, 2006

- Distinction between associative and propositional processing

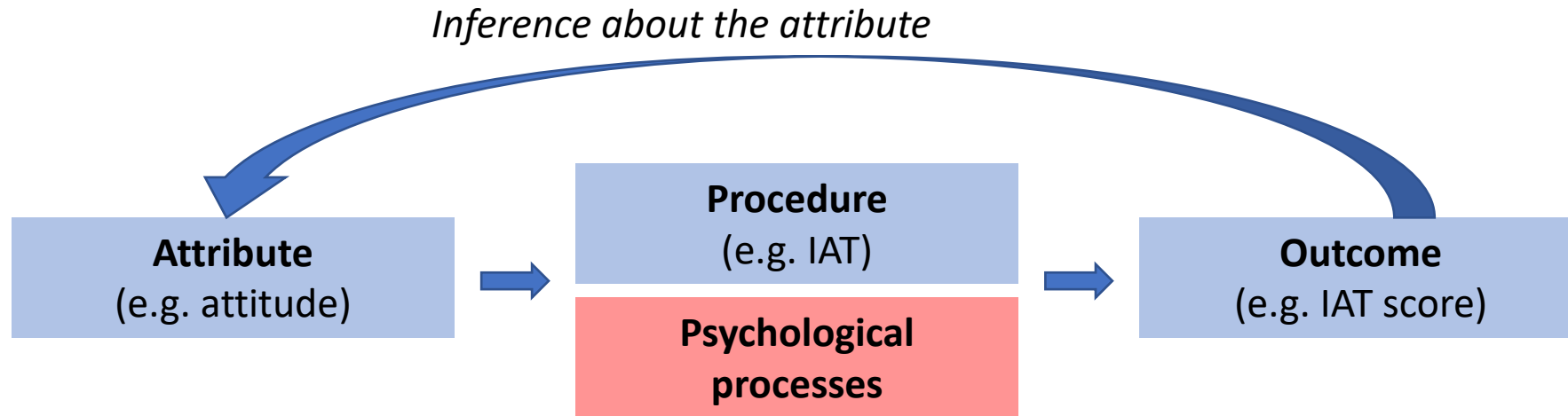


Associative-Propositional Evaluation (APE) Model  
Gawronski & Bodenhausen, 2006

- Association activation depends on: the object, the context, ongoing mental activity



Importantly, we are not measuring the attitude,  
we are measuring an outcome, related to the attitude



(a similar point can be made for questionnaires; Thurstone, 1930; Fazio, 2007)

Implications:

E.g. a manipulation could influence the attribute, or something in between the attribute and the outcome.

→ importance of conceptual replication with different measures

Are implicit attitudes unconscious?

Can we use indirect tasks to measure the unconscious?

- Greenwald & Banaji (1995): implicit attitudes as

*“introspectively unidentified (or inaccurately unidentified) traces of past experience that mediate favorable or unfavorable feeling, thought, or action toward social objects”*  
(p. 8).

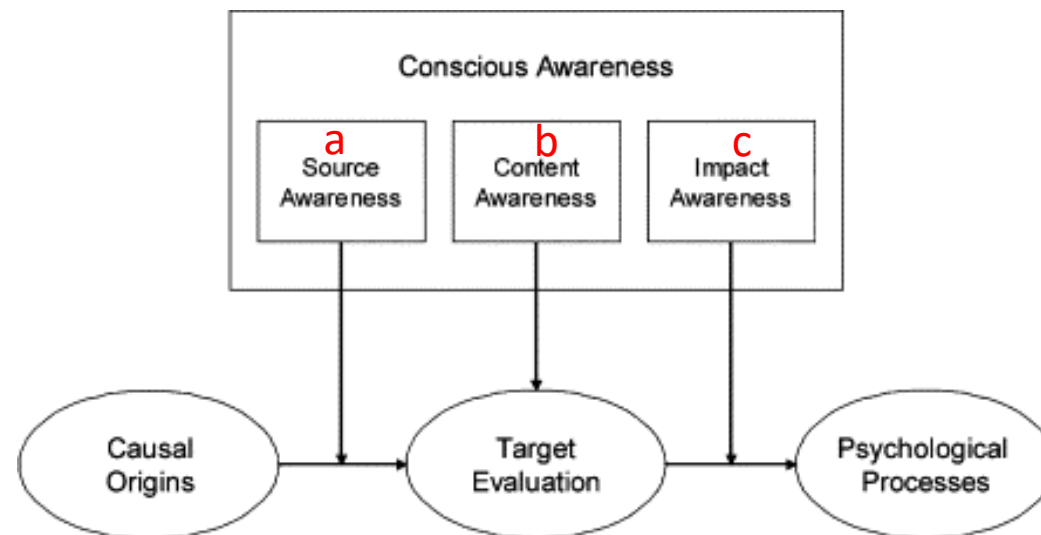
- Based on this definition, often the following equations are made
  - explicit = conscious; implicit = unconscious



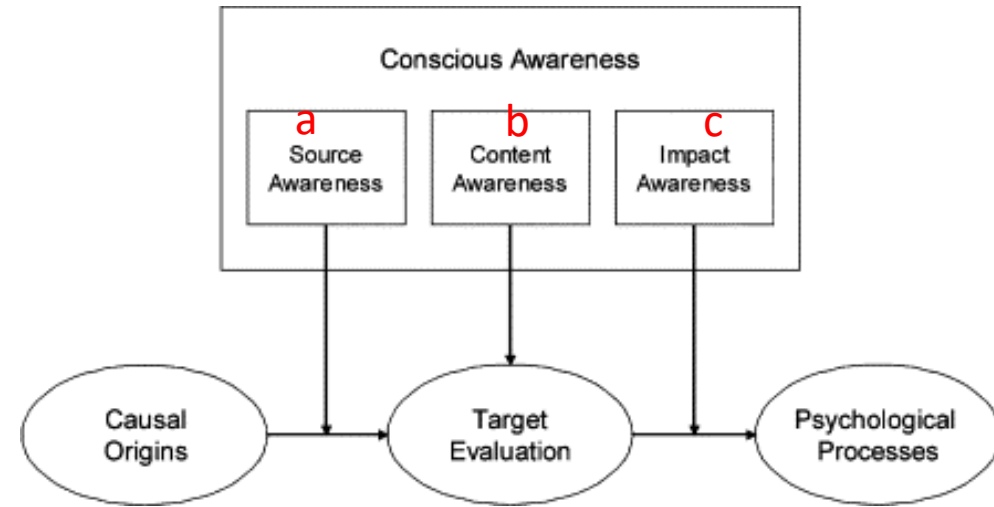
The term 'unconscious' can refer to at least three different aspects of an attitude:

- a) people's awareness of the origin of a particular attitude (*source awareness*),
- b) people's awareness of the attitude itself (*content awareness*), or
- c) the influence this attitude has on other psychological processes (*impact awareness*)

(see Gawronski, Hoffman, & Wilbur, 2006)



# Available empirical evidence



- People can be unaware of the sources of their explicit attitudes (a)
- Available evidence suggests that people typically can have introspective access to their attitudes; **no evidence of the existence of implicit preferences without awareness in the sense (b)**
- People can be unaware of the consequences of their attitudes on behavior (c)
- **In other words: implicit attitudes ≠ unconscious**  
(see also *Brownstein, Madva, & Gawronski, 2019*)

# Validity of indirect measures

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- **Note of caution: they are measurement formats**
  - We can evaluate them *in general terms*, but each specific application must be independently validated



# Predictive validity of indirect measures

- Abundant empirical evidenced that indirect measures of attitudes can predict behaviors (see Cameron, Brown-Iannuzzi, & Payne, 2012; Greenwald, Poehlman, Uhlmann, & Banaji, 2009; Perugini, Richetin, & Zogmaister, 2010).
- **Meta-analytic estimates of correlations** between individuals' scores on implicit measures and measures of behavior have varied, from approximately  $r = .14$  to  $.37$  (Cameron et al., 2012; Greenwald, Poehlman, Uhlmann, & Banaji, 2009; Kurdi et al., 2018; Oswald et al., 2013).

⇒ All positive, but generally low-to-medium correlation

⇒ From these data, critics have concluded that indirect measures, in particular, the IAT (Greenwald et al., 1998), are *“poor” predictors of behavior*.

However, these are the levels of attitude-behavior correlation that we should expect!

# Predictive validity of indirect measures

- Also, their **incremental validity** over self-report measures has been well established (Perugini et al., 2010), which is important for pragmatic reasons because the latter are typically easier to administer.

- **WHEN** are indirect measures predictive of behavior?

Important to:

- establish the best settings for their administration
- Better understand how they operate and what differentiates them from other measures of attitudes
- Better understand implicit/automatic attitudes

# When are indirect measures predictive of behavior?

- When individuals base **their behavior** on automatic processing (see Friese, Hoffman, and Schmitt , 2009; Perugini, Richetin, & Zogmaister, 2010)
  - E.g. ego-depletion, positive mood, alcohol, low working memory capacity
- when they contrast two complementary categories (e.g., two candidates in an election)
- and when the similarity or correspondence between the concept measured by IAT and the predicted behavior is high
  - (see Greenwald and colleagues; 2009)
- When the relevant construct is active (see, e.g. Zogmaister, Richetin, Perugini, Vezzoli, & Songa, 2020)