A Meta-Analysis of Implicit Association Tests adapted to Measure Sexual Interest in Children

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Background

- Sexual interest in children
  - Distinguishes child molesters from non-molesters
  - Predicts sexual recidivism
- Common methods
  - Penile plethysmography (PPG)
  - Self-report measures
- Indirect measures
  - A useful complement to currently used measures of sexual interest?

What is the Implicit Association Test?

- First used in the field of social psychology
- Categorization task
  - Strength of automatic associations in memory between a concept category (e.g., adult and child) and an attribute category (e.g., sexy and not sexy)
  - Inferred from the relative speed with which one sorts stimulus words or pictures into categories

Sexual Attraction to Children IAT

A quick example

Summary of scoring

- Automatic associations between child and sexy vs. adult and sexy
- Strength inferred from sorting speed
  - Slower in trials that are inconsistent (e.g., sorting stimuli into the category child or sexy)
- More positive scores represents faster speeds when the child and sexy categories share a response key vs. when the adult and sexy caterogy share a response key

Purpose

- A meta-analysis of IAT measures adapted to measure sexual interest in children
  - Can they distinguish child molesters from non-molesters?
- Construct validity
  - What is "it" measuring?

Inclusion criteria

1) Sample of sexual offenders
2) A comparison group (e.g., nonsex offender, students)
3) Data on an IAT measure adapted to measure sexual interest in children
4) Sufficient information to calculate *d*

Searching for studies

1) Search of PsychINFO, Criminal Justice Abstracts, & Digital Dissertations
2) Search reference list of obtained studies & review articles
3) Reviewed previous ATSA conference brochures
4) Emailed those active in the field

Studies adapting IAT measures to assess sexual interest in children

- *k* = 11
  - Published (*k* = 6)
  - Unpublished (*k* = 5)
- Diverse samples
  - Canada (*k* = 2)
  - Germany (*k* = 2)
  - UK (*k* = 3)
  - Single samples:
    - Australia (*k* = 1)
    - Belgium (*k* = 1)
    - Ireland (*k* = 1)
    - United States (*k* = 1)

IAT adapted differently

- Stimuli choice
  - Some used only words (*k* = 5)
  - Some used a combination of words and pictures (*k* = 5)
    - Usually words represent the attribute category and pictures represents the concept category (child/adult)
    - Thornton et al. (2009) used average of two IATs (one words, one combination of words and pictures)

IAT adapted differently

- Different attribute categories
  - Sexy/ Not Sexy (erotic/ not erotic)
  - Sex/ Not Sex (or nonsex)
  - Sex/ Furniture
- Some separated gender (concept category)
  - Women/children (Steffens et al., 2008)
  - Banse, Schmidt, et al. team created two IATs (male and female)

Summary

Study	Concept	Attribute	Words only
Babchishin et al. (2010)	Child/Adult	Sexy/ Not Sexy	
Banse et al. (2010)	Girls/Women Boys/Men	Sexually exciting/ unexciting	
Brown et al. (2009)	Child/Adult	Sex/ Not-Sex	
Gray et al. (2005)	Child/Adult	Sex/ Not-Sex	YES
Mihailides et a. (2004)	Children/Not Children	Sexual/ Not Sexual	YES
Nunes et al. (2007)	Child/Adult	Sexy/ Not Sexy	YES
Ó Ciardha (2010)	Child/Adult	Sex/Furniture	YES
Schmidt & Banse (2010)	Girls/Women Boys/Men	Sexually exciting/ unexciting	
Steffens et al. (2008)	Child/Woman	Erotic/Not Erotic	YES
Thornton et al. (2009)	*presents average of two IATs (Nunes/ Gray & Snowden)		
Vanhoeck et al. (2010)	Girls/Women Boys/Men	Sexually exciting/ unexciting	

Study	Sample size		Comparison group	Cohen's d (95% CI)
	N CM	N Non-CM		
Babchishin et al. (2010)	35	21 10	Nonsex Rapists	0.43 (-0.12 to 0.98) 0.10 (-0.57 to 0.71)
Banse et al. (2010)[a]	38	37 38	Nonsex Community males & prison workers	0.48* (0.02 to 0.94) 0.43 (-.05 to 0.88)
Brown et al. (2009)	54	49	Nonsex	0.92* (0.51 to 1.33)
Gray et al. (2005)	18	60	Nonsex and rapists	0.84* (0.30 to 1.38)
Mihailides et a. (2004)	25	25 25 25	Nonsex University- males University- females	0.63* (0.06 to 1.20) 0.97* (0.38 to 1.56) 0.92* (0.34 to 1.50)
Nunes et al. (2007)	27	29	Nonsex	0.66* (0.10 to 1.21)
Ó Ciardha (2010)	24	24	University-males	0.60* (0.02 to 1.18)
Schmidt & Banse (2010)[a]	41	25 12	Nonsex Rapists	0.22 (-0.28 to 0.71) 0.44 (-0.21 to 1.10)
Steffens et al. (2008)	17 16	21 30	Primary rapists Non-exclusively pedophiles	0.53 (-0.08 to 1.15) 0.08 (-0.57 to 0.71)
Thornton et al. (2009)	20	20	Rapists	0.72* (0.08 to 1.36)
Vanhoeck et al. (2010)[a]	37	6	Rapists	0.43 (-0.44 to 1.30)

Statistical Analyses

- Fixed-effect and random-effect meta-analysis
  - Only fixed presented
- Q = variability in effect sizes across studies
- Moderators (fixed-effect, global attitudes item):
  $Q_{between\text{-}levels} = Q_{overall} - Q_{within\text{-}levels}$
  - Distributed as chi-square (df = n levels – 1)
- Comprehensive Meta-analysis program

Statistical Analyses

- Some studies had more than one effect size (when there were several comparison groups or IAT measures)
  - Rule for the overall meta-analysis:
    - Use nonsex offenders
    - Use average of the IAT measures
  - *Note*: subgroup analyses were conducted

Meta-analysis

- Overall, IAT measures adapted to assess sexual interest in children *do* distinguish between child molesters and non-molesters
  d = 0.606 (0.442 to 0.769), k = 11, N = 651
- There were no outliers, or significant variability between studies (i.e., findings were consistent)
  Q = 6.42, df = 10, p =.78

Comparison groups

Comparison	k	Weighted d	Q	n
CM vs. Nonoffenders (males)	3	0.623 (0.318 to 0.928)	2.05	174
CM vs. Nonsex offenders	6	0.578 (0.376 to 0.790)	5.46	406
CM vs. Rapists	5	0.381 (0.074 to 0.688)	2.99	219

Pictures and words produce similar results

- Words (k = 5):
  d = 0.659 (0.404 to 0.914), n = 270
  Q = 0.64, df = 4, p = .96
- Pictures (k = 6):
  d = 0.568 (0.355 to 0.782), n = 383
  Q = 5.49, df = 5, p = .36
- $Q_{between}$ = 0.29, df = 1, p = .59

No publication bias

- Published
  - d = **0.698** (0.490 to 0.906), k = 6, n = 397
  - Q = 2.64, df = 5, p = .76
- Unpublished
  - d = **0.454** (0.188 to 0.720), k = 5, n = 253
  - Q = 1.77, df = 4, p = .78
- $Q_{between}$ = 2.01, df = 1, p = .16

Girl-Women IATs seem to do better

- Banse, Schmidt et al. studies (k = 3; n = 184)

IAT Type	Weighted d	Q
Girls-Women	0.723 (0.541 to 0.906)	5.47**
Boys-Men	0.372 (0.179 to 0.565)	0.60
Average	0.617 (0.429 to 0.804)	3.25

- Significant variability in Girls-Women IAT studies
- Insufficient studies

Summary findings

- Overall, IAT measures distinguish child molesters from non-molesters
  - Community males
  - Nonsex offenders
  - Rapists
- Pictures vs. word only IATs
- Splitting gender
  - Girls-Women IAT appear to do better than Boys-Men IAT
    - Replication needed

Convergent validity of IAT measures

So it distinguishes child molesters from other groups, but what exactly is it measuring?

Penile Plethysmography (PPG)

- A physiological measure of sexual arousal
  - Thornton et al. (2009)
    - r = -.179, p > .05
  - Babchishin et al. (2010)
    - r = .19, p > .05
  - More data required, inconclusive
    - Possible that IAT and PPG measure different constructs (sexual arousal vs. schemas)

The Screening Scale for Pedophilic Interest (SSPI)

- A file-based measure of sexual interest in children
  - Banse et al. (2010)
    - Girls-Women IAT, r = .17, p > .05
    - Boys-Men IAT, r = .12, p > .05
  - Babchishin et al. (2010)
    - Child-Adults IAT, r = -.05, p > .05
  - Vanhoeck et al. (2010)
    - Girls-Women IAT, r = .50, p < .05
    - Boys-Men IAT, r = .58, p < .05

Self-report measures of sexual interest

- Banse et al. (2010): Explicit Sexual Interest Questionnaire (ESIQ)
  - Girls-Women IAT, $r = .32$, $p < .05$
  - Boys-Men IAT, $r = -.04$, $p < .05$
- Babchishin et al. (2010) : Sexual Interest Profiling System (SIPS)
  - Child-Adults IAT, $r = .35$, $p < .01$
  - Other
    - STABLE sexual deviancy items (interview and file based)
      - $r = .40$, $p < .05$

Viewing time measures

- Indirect measure of sexual interest
- Longer viewing time indicate greater interest in the age/gender group
  - Banse et al. (2010)
    - Girls-Women IAT, $r = .27$, $p < .05$
    - Boys-Men IAT, $r = -.15$, $p > .05$
  - Babchishin et al. (2010)
    - Child-Adult IAT, $r = .33$, $p < .01$

Relationship with other measures of interest

- Social desirability
- Risk assessment

Balanced Inventory of Desirable Responding (BIDR)

- Impression management and presentation bias
  - Babchishin et al. (2010)
    - Overall, $r = -.12$, $p > .05$
    - IM, $r = -.01$, $p > .05$
    - Self-deception, $r = -.24$, $p > .05$
  - Banse et al. (2010)
    - Girls-Women IAT, $r = .07$, $p > .05$
    - Boys-Men IAT, $r = .09$, $p > .05$
  - Nunes et al. (2007)
    - IM, $r = -.22$, $p > .05$

Risk assessments

- Static-99 and RRASOR, both actuarial risk assessment scales designed to predict sexual recidivism
  - Babchishin et al. (2007)
    - RRASOR: $r = -.13$, $p > .05$
    - Static-99: $r = -.10$, $p > .05$
  - Nunes et al. (2007)
    - RRASOR: $r = .27$, $p > .05$
    - Static-99: $r = .43$, $p < .05$
  - Vanhoeck et al. (2010)
    - Girls-Women IAT , Static-99: $r = .29$, $p < .05$
    - Boys-Men IAT, Static-99: $r = .28$, $p < .05$

Summary

- PPG = Inconclusive
- SSPI = Recent studies found large correlations
- Self-report measures = yes!
  - But if separating gender, may only be found in women-girls IATs
- Viewing time measures = yes!
  - But if separating gender, may only be found in women-girls IATs
- Social desirability = no!
- Risk assessment scales = 2/3 studies found moderate correlation coefficients

Overall summary

- Distinguishes between groups
  - Consistent results despite different methodology
- Construct validity
  - What exactly is it measuring?
    - Seems more to do with schemas/cognitions vs. sexual arousal
    - Caoilte?
- Is it predictive of recidivism?
  - Relationship with risk scales (e.g., Vanhoeck et al., 2010; Nunes et al., 2007)

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