Behavioural Treatments for Tic Disorders: A Meta-Analysis

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Tic Disorders

- Tics are “sudden, rapid, recurrent, nonrhythmic motor movement[s] or vocalization[s]” (APA, 2013, p. 81).
- The DSM-5 categorizes four separate tic disorders (APA, 2013).
  - Tourette’s disorder
  - Persistent motor or vocal tic disorder
  - Provisional tic disorder
  - Other specified and unspecified tic disorders

- Approximately 15% of school-age children have been diagnosed with Tourette’s disorder (Robertson, 2008).
- The majority of individuals with Tourette’s disorder also hold comorbid diagnoses, with ADHD being the most common (Freeman et al., 2005).

Behavioural Treatments for Tic Disorders

- A number of interventions have been developed to ameliorate the symptoms of Tourette’s disorder.
- Recent reviews support Habit Reversal Training (HRT) as an evidence-based treatment (Can & Chung, 2005; Cook & Blancher, 2007; Frank & Cavanna, 2013).
- It remains unclear whether other available treatments are effective and under which conditions these treatments are most successful.

Objective

To determine and clarify the effectiveness of leading behavioural interventions for tic disorders.

Research Questions

1. How effective are behavioural interventions for improving symptoms of tic disorders based on:
   (a) Comparisons of tic frequency and intensity from pre- and post-treatment
   (b) Comparisons of tic frequency and intensity between behavioural treatment groups and groups receiving minimal treatment
2. Does age or gender moderate the effectiveness of behavioural interventions?
3. Are behavioural interventions less effective for those with a comorbid diagnosis of ADHD?
4. What treatment components moderate the effectiveness of various behavioural treatments?

Methods

- A meta-analysis was conducted.
  - The following databases were searched:
    - PsycINFO, Medline, ERIC, ProQuest Dissertations and Theses, Google Scholar, and Scopus
    - Limit: English-language articles only
    - Published or prepared before January 2014

Search results combined (n = 1652)

Articles screened on basis of title and abstract

Included (n = 17)

- One unpublished and 16 published studies met criteria for inclusion.
- Year of publication ranged from 1990 to 2013.
- Number of participants:
  - Total (n = 601)
  - Behavioural Treatment (n = 428)
  - Minimal Treatment (n = 173)
- Each study was coded following a coding manual.
  - Inter-coder reliability for all variables was 100%.
  - Data was entered and analyzed using Comprehensive Meta Analysis Version 3.0 (Borenstein, Hedges, Higgins, & Rothstein, 2014).

*Modified version of the PRISMA Flow Diagram (Moher, Liberati, Tetzlaff, & The PRISMA Group, 2009)

Results

1. a) When comparing tic frequency and intensity pre- and post-treatment, the impact of behavioral interventions revealed a very large effect size (d = 1.03, 95% CI [0.75, 1.28], p < .001, K = 18).
   b) When comparing treatment groups to groups who received minimal treatment, behavioural interventions were found to have a medium effect on improving tic frequency and intensity (d = 0.53, 95% CI [0.20, 0.91], p = .002, K = 6).
2. Age and gender were not found to moderate the effectiveness of behavioural interventions for tic disorders (G2(2) = 1.91, p = .38).
3. Comorbid ADHD was found to significantly moderate the effect size (G2(1) = 8.87, p = .003), with treatment efficacy decreasing as percentage of ADHD diagnoses in the sample increased.
4. The inclusion of contingency management was positively correlated with treatment efficacy (G2(1) = 20.90, p < .001), while psychoeducation was negatively correlated (G2(1) = 10.45, p = .002).

Discussion

- The results of this meta-analysis support the overall effectiveness of behavioural interventions for tic disorders.
- Children with comorbid ADHD do not respond as readily to behavioural interventions as those without comorbid ADHD.
- The inclusion of contingency management in treatment interventions may promote better outcomes in children with tic disorders.
- A possible explanation for the negative correlation between treatment efficacy and psychoeducation is that psychoeducation takes time away from other intervention components.

References


Acknowledgments

Special thanks to the members of the Family and Developmental Psychopathology Lab for their helpful comments and suggestions. This research was funded by the University Research Grants Program at the University of Manitoba.

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