

Check Mate of ADHD: A prospective, open label study*

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Introduction

Although chess is a traditional board game based on very simple rules, it requires the use of complex cognitive strategies. It has been used previously to prevent dementia (Dowd and Davidhizar 2003), and as a therapy option to enhance cognitive abilities in schizophrenia (Demily, Cavezian et al. 2009). Given its educational benefits, the European Parliament recently made a declaration to encourage the introduction of the program 'Chess in School' into the educational systems of the European Union (Binev 2012). There are no empirical studies testing if chess could be a psychotherapeutic alternative for ADHD. This is surprising given that central executive dysfunction is core to ADHD (Raiker, Rapport et al. 2012), and several executive functions are needed when playing chess (Remine 2008).

Methods

Design: pilot non-comparative descriptive study. **Participants:** The diagnosis was based on clinical interviews with each child and at least one parent carried out by a child psychiatrist. **Setting:** The study consisted of an 11-week trial of chess training. All children had weekly 1 hour sessions over a period of 11 consecutive weeks taught by a chess expert (Club 64 Villalba). **Pre- and post-program measures:** The severity of ADHD was evaluated using the Spanish version of the Swanson, Nolan and Pelham Scale for parents (SNAP-IV) (Swanson 1995), and the Abbreviated Conners Rating Scales for parents (CPRS-HI) (Conners 1990) at each visit. Parents were blind to their previous ratings in both scales during each evaluation. **Data Analyses:** We used a paired *t*-test to compare variables pre- (Time 1; T1), and post- (Time 2; T2) treatment. In addition, within group effect-sizes, were calculated using Cohen's *d* statistic for each scale (Cohen 1988). A positive effect-size was considered as a measure of improvement (decrease in ADHD severity). The cutoff point for considering statistical significance was set at $p < 0.05$. **Ethics:** The study was approved by the Puerta de Hierro Hospital Institutional Review Board (IRB) committee.

Results

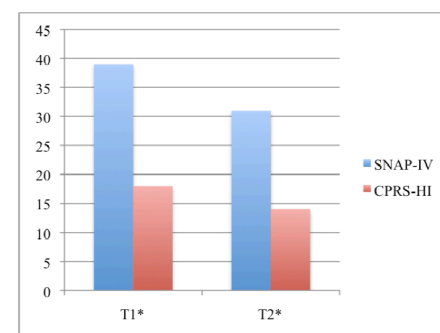
Mean age (SD) was 10.73 years (± 2.24). Most participants were male (70.5%). Nearly 90% of the participants were receiving additional teaching support at school, thus that our sample was particularly impaired with regard to school performance. The majority (81,8%) of participants had ADHD, Combined Type, and 61.4% were taking medication for ADHD. Also, a relevant percentage (40%) had at least another mental disorder (DSM-IV).

There were statistically significant pre- to post-training improvements in ADHD severity as measured by both scales (See Figure 1). More than 80% of parents reported a reduction in both scales. In order to test the magnitude of the difference between pre- and post-intervention, we calculated effect sizes for the SNAP-IV ($d=0.96$) and the CPRS-HI ($d=0.92$). We found a correlation between Intelligence Quotient (IQ) and SNAP-IV improvement ($p < 0.05$; see Figure 2).

TABLE. Pre- and Post-training Changes in the SNAP-IV and the CPRS-HI.

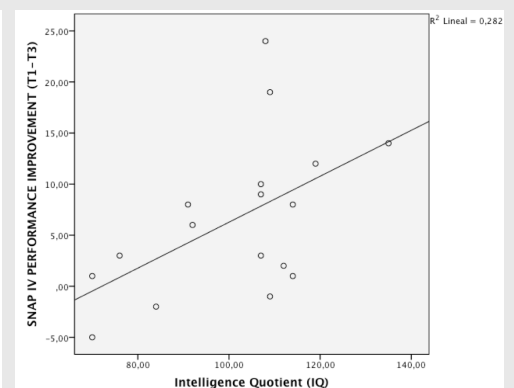
	n	Pre-test (T1)		Post-test (T2)		t	p
		M	SD	M	SD		
SNAP-IV	42	39.26	9.56	31	9.78	6.23	<0.001
Parents							
Inattention	42	20.90	4.81	16.67	4.91	6.56	<0.001
Hyperactivity-Impulsiveness	42	18.36	6.37	14.33	6.75	4.79	<0.001
CPRS-HI	34	18.68	5.41	14	5.49	5.39	<0.001

Figure 1. Pre- (T1) to post-training (T2) improvements in ADHD severity.



* $p < 0.001$

Figure 2. Correlation between the SNAP-IV (parents) and IQ.



Conclusions

Chess playing is a therapeutic choice for children with ADHD. More methodologically sound studies (i.e. including independent observations; randomized, controlled trial design studies) with larger samples are warranted.

References

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2. Hazell, P., T. Lewin, et al. (2005). "What is a clinically important level of improvement in symptoms of attention-deficit/hyperactivity disorder?" *Aust N Z J Psychiatry* 39(5): 354-358.

* This study is currently under review for publication in the *Journal of Attention Disorders*