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How to increase academic performance in children with oppositional defiant disorder? An implicit theory effect

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ABSTRACT

The aim of the present study was to determine whether the implicit theory effect extends to children with oppositional defiant disorder (ODD), with academic difficulties. Twenty-five male children, aged 8–11 years with ODD were randomly assigned to one of two experimental conditions (Incremental Theory highlighting the possibility of self-improvement *vs.* control). An increase of cognitive performance (IQ) was found for children with ODD in the incremental condition, but not in the control condition. This cognitive improvement could be viewed as a protective factor for children and adolescents with ODD on academic setting.

1. Introduction

In the last decade, several studies have suggested that it is possible to increase academic performance of normally developing adolescents by manipulating their ability beliefs (Aronson, Fried, & Good, 2002; Cury, Elliot, Da Fonseca, & Moller 2006; Good, Aronson, & Inzlicht, 2003; Henderson & Dweck, 1990). In these studies, a selection of participants was informed that the ability in question was highly malleable (incremental theory), whereas others were informed that this ability was fixed (entity theory). Interestingly, this belief manipulation was found to predict performance in normally developing adolescents with higher levels of performance for subjects in the malleable ability condition than for those in the fixed condition (Dweck & Molden, 2005).

To date only one study has addressed this issue in adolescents with mental disorders, which generally have poor academic performance relative to their normally developing peers. Recently, Da Fonseca et al. (2008) have demonstrated that belief manipulations affect IQ-test performance of adolescents with generalized anxiety disorders (GAD; Da Fonseca et al., 2008). This study revealed that, relative to a control condition, incremental theory has a positive effect on IQ-test performance controlled for a baseline level. In other words, when young adolescents are confronted with a context in which intelligence is highly malleable, they tend to show substantial IQ performance improvement as compared to a control condition.

The aim of the present study was to determine whether this implicit theory effect extends to young adolescents with mental disorders other than GAD, such as those with oppositional defiant disorders, which also present substantial academic difficulties. Importantly, we used exactly the same experimental design as that used by Da Fonseca et al. (2008).

Oppositional defiant disorder (ODD) is one of the most common childhood psychiatric disorders with a pattern of negative, hostile and deviant behaviour that is severe enough to impair the child's functioning (American Psychiatric Association, 1994; Burke, Loeber, & Birmaher, 2002). Indeed, these behaviours interfere with learning and school adjustment as children with ODD having significantly lower grades than typically developing children. Also, children with ODD are more likely to be placed in special classes at school than are children with other psychiatric disorders (Greene et al., 2002). Early intervention in children with ODD should thus target a reduction of risk factors, such as

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repetitive failures, and an increase of protective factors, such as academic competence. This could constitute an important step to prevent academic failure and behaviour problems in later school years.

The present study aims to investigate whether a new cognitive therapy, such as the implicit theory manipulation, could be of benefit for children with ODD. Based on previous findings showing that this belief-altering intervention is effective not only for typically developing adolescents but also for adolescents with GAD, we hypothesized that the incremental theory effect would have a positive influence on IQ-test performance relative to performance on a control condition in clinically referred children with ODD.

2. Method

2.1. Participants and design

Twenty-five male children with ODD voluntarily accepted to participate in the experiment. They were aged 8–11 years ($M = 112$; $SD = 12.96$ months) and were all diagnosed by a trained psychiatrist on the basis of the DSM-IV (A.P.A., 1994) diagnosis criteria. Clinical assessment also comprised a semi-structured clinical diagnostic interview (Schedule for Affective Disorders and Schizophrenia for School-Age Children-Present and Lifetime Version; K-SADS-PL: Kaufman, Birmaher, Brent, Rao, & Ryan, 1997) conducted separately with the parents and the child. Children with ODD were recruited from a sample of patients who had been referred in the Department of Child and Adolescent Psychiatry at the Sainte Marguerite Hospital in Marseille. Children were excluded from the study for any of the following reasons: conduct disorder, mental retardation, selective mutism, associated pervasive developmental disorder, schizophrenia or other psychotic disorders, major depressive disorder, major bipolar disorder, organic mental disorders, or absence of parental consent. Eight children had ADHD (4 in each group) in addition to ODD. At the time of testing, all children were free of any treatment involving psychotropic medication. Children in the sample were of diverse ethnic and socio-economic backgrounds. The ODD participants were randomly assigned to one of two experimental conditions (Incremental Theory *vs*. control).

2.2. Procedure and manipulations

Participants were individually tested in a quiet room at the Sainte Marguerite Hospital by a male experimenter who was unaware of the hypotheses being tested. They were first presented with a target task – the Coding subtest of the Wechsler Intelligence Scale for Children – III (WISC-III, Wechsler, 1996). This test requires participants to complete pairs using a series of digit-symbol codes as quickly as possible during 2 min. This test aims at assessing visual–motor coordination, concentration, speed of information processing, and rote learning. According to Mayes, Calhoun, Bixler, and Zimmerman (2009), the Coding subtest is one of the strongest predictors of math achievement in children.

All participants were informed that this task is generally used to assess IQ, attentional capacity and speed of information processing in children and adolescents. Participants were given 2 min to complete the task. Performance on this test was used as a baseline measure of performance (i.e., Time 1 performance). Following this test, the experimental manipulation was introduced, with half of the participants being presented with the incremental theory condition and the other half with a control condition.

In the incremental theory condition, the experimenter provided participants with a written form of the implicit theory manipulation: "In multiple studies, scientists have shown that: 1) Everyone demonstrates a certain level of this type of ability, but it can be changed substantially in many ways, 2) This type of ability does not depend on gifts or qualities that one has from birth, 3) If one makes an effort, one can change one's level of ability, and 4) This type of ability is modifiable."

A figure displaying longitudinal data of coding performance that clearly supported the malleability position was then shown. Finally, participants were informed: "In conclusion, today we want to test you on a certain ability that is a factor in teen intelligence. This ability is relatively unstable, so it is capable of being changed".

In the control condition, participants were tested without the implicit theory manipulation but the condition otherwise followed the same procedure as the incremental theory group.

Following this, all participants completed an implicit theory manipulation check measure. They were then given 5 min to practice on a similar coding problem following which they were asked to complete the Coding test again for 2 min (i.e., Time 2 performance). Finally, the experimenter scored the tests and gave positive feedback to all participants. Participants were then thoroughly debriefed. The experimenter remained blind to the participants' implicit theory condition throughout the experimental session.

2.3. Measures

2.3.1. Manipulation check

An incremental theory item ("The purpose of this session is to test an ability that is relatively unstable and not that difficult to change") and an entity theory item ("The purpose of this session is to test an ability that is relatively stable and difficult to change") were used to verify the effectiveness of the implicit theory manipulation (Cury et al., 2006). Participants responded using a 7-point scale, where (1) meant "do not agree" and (7) meant "totally agree". A significant negative correlation was found between scores on the two items ($r = -.85$). Then, the entity theory score was reversed and added to the incremental score, and the total was averaged ($\alpha = .89$) to form an implicit theory index.

2.3.2. Performance

Participants' scores on the Coding test of the WISC-III (Wechsler, 1996) at Time 1 and Time 2 were used as an indicator of IQ performance.

3. Results

3.1. Preliminary analyses

An independent sample *t*-test revealed no significant differences between the two groups (incremental *vs*. control groups) at baseline testing (T1 performance) indicating that the randomly assignment was correctly carried out, $t\ (22) = -0.66$, $p = .51$. To examine the efficacy of the implicit theory manipulation, an additional *t*-test was done on the implicit theory index, $t\ (22) = -3.00$, $p = .006$. Results show that participants placed in the incremental theory condition ($M = 5.7$) perceived the purpose of the session as a test of "an ability that is relatively unstable and not difficult to change" more than those in the control condition ($M = 4.1$). This demonstrates that the implicit theory manipulation was effective.