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Article · January 2013

DOI: 10.2174/2210676603666131209232313

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# Changes in Attachment Representations During an Open Trial of a Psychological Intervention for Adolescents with Learning Disorders

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**Abstract:** *Background:* Most of the interventions developed for adolescents with learning disorders (LDs) focus on enhancing cognitive and learning skills. However, these adolescents have been usually found to score high on measures of insecure attachment orientations.

*Objectives:* The purpose of the current analysis was to examine changes in attachment orientations towards parents, attachment-related representations of teachers, and feelings of loneliness among adolescents with LD during an open trial of a psychological intervention for adolescents diagnosed with learning disorders (the "I Can Succeed" program, or ICS). ICS aims to target both academic and emotional functioning.

*Methods:* Participants included 40 adolescents with LD and their parents. Measures included Attachment to parents (Kerns); Attachment representations of teachers (Children's Appraisal of Teacher as a Secure Base (CATSB); and Loneliness (Peer-Network Loneliness and Peer-Dyadic Loneliness Scale (PNDLS). Adolescents completed questionnaires before the ICS Intervention (baseline), at the end of the acute phase (end of treatment) and at a six months follow-up meeting (follow-up).

*Results:* The main results of the current study indicate that 6 months after the "I Can Succeed" intervention, there was improvement in LD students' attachment security to mothers, appraisals of homeroom teacher as a security-enhancing figures (more acceptance and less rejection), and satisfaction with relationships with peers and friends (lower dyadic loneliness scores). One practical implication concerns the use of attachment theory as a foundation upon which to develop interventions among adolescents with LD.

**Keywords:** Adolescents, attachment, learning disorders, psychological intervention.

## INTRODUCTION

Hundreds of studies have examined individual differences in close relationships and interpersonal functioning throughout life from an attachment theory perspective (see Mikulincer & Shaver, 2007, for an extensive review). However, only during the past decade have studies focused on the quality of attachment representations and interpersonal functioning of children and adolescents with Learning Disabilities (LD). Attachment representations among students with LD are important to study, since they may act as vulnerability or protective factors, in explaining the socio-emotional and behavioral functioning of these students. In particular, research should focus on adolescents' attachment orientations towards parents, teachers, and friends, with whom they can form the most significant attachment relationships during adolescence (e.g., Al Yagon, 2007; 2011b; 2012; Al Yagon & Margalit, 2006).

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Children with LD have been usually found to score higher on measures of insecure attachment orientations (either anxious or avoidant attachment orientations) compared to their non-LD peers (Al Yagon & Mikulincer, 2004a). Moreover, findings clearly indicate that more anxious or avoidant attachment orientations increase the risk for problems in social and emotional adjustment among school age children (Al Yagon & Mikulincer, 2004b; Murray & Greenberg, 2001) and adolescents (Al Yagon, 2012; Grossman, Grossmann, Fremmer-Bombik, Kindler, Scheurer-Englisch & Zimmerman., 2002) with LD. These studies put particular emphasis on attachment orientations toward mothers, although fathers' role in children's development and adjustment has been also found to be important (e.g., Bretherton, 2010; Christie-Mizell, Keil, Laske, & Stewart., 2011; Margaglio, Amato, Day, & Lamb., 2000; Parke, 2004).

Close relationships with teachers also play an important role in explaining problems in social, emotional, and academic adjustment of children and adolescents with LD (e.g., Al Yagon, 2012; Al Yagon & Margalit, 2006; Al Yagon & Mikulincer., 2004a; Commodari, 2013; Pianta, 1999; Pianta,

Nimetz, & Bennett, 1997; Pianta & Stuhlman, 2004). LD students view their teachers as more rejecting, less available and less accepting than children without LD and then have a more insecure attachment orientation towards teachers (e.g., Al Yagon & Mikulincer, 2004a). Moreover, LD students who hold more insecure attachment relationships with teachers have been found to show more adjustment problems in school (e.g. Al Yagon & Mikulincer, 2004b; Murray & Greenberg, 2001).

Besides attachment to parents and teachers, loneliness among LD adolescents is an additional important risk factor for maladjustment and mental health problems (Jones, Schinka, van Dulmen, Bossarte, & Swahn, 2011). Loneliness reflects a global indicator of dissatisfaction with the quality or the quantity of one's interactions with peers and friends (Asher, Parkhurst, Hymel, & Williams., 1990), and several studies have consistently found that children and adolescents with LD report higher levels of loneliness than their non-LD peers (see for review Margalit & Al-Yagon, 2002).

Currently, most of the interventions among children and adolescents with LD have focused on enhancing cognitive and learning skills, such as reading process, writing abilities, mathematic skills, and memory functioning (e.g. Heath, 2007; Wexler, Voughn, Roberts, & Denton, 2010). Only few intervention programs emphasize the social and emotional domains (see Kavale & Mostert, 2004, for a review), and most of these include cognitive behavior therapy (Kroese, Dagnan & Loumidis, 1997), social skills training (Vaughn, LaGreca, & Kuttler, 1999), academic motivational programs (Brier, 2007), and group treatment methods (Mishna & Muskat, 2004; Freilich & Schechtman, 2010). A meta-analysis of studies examining social skills programs for children with LD (Kavale & Mostert, 2004) concluded that social skills training programs should be "rebuilt" as part of a comprehensive treatment. Moreover, Palombo (2001) suggested that the treatment of these children should include work with parents, teachers, and other professional who maintain close relations with the children.

We have recently published a study on the feasibility of the intervention "I Can Succeed" (ICS), which addresses both academic and emotional aspects of adolescents diagnosed with LD (Kopelman Rubin, Brunstein Klomek, Al-Yagon, Mufson, Apter, & Mikulincer, 2012). ICS attempts to cover the intrapersonal, interpersonal, family, and school domains of LD adolescents. The interpersonal aspects of this intervention are theoretically grounded in interpersonal psychotherapy for depressed adolescents (IPT-A) (Mufson, Dorta, Moreau, & Weissman., 2004 a; Mufson, Dorta, Wickramaratne, Nomura, Olfson, & Weissman 2004b). (For more details about ICS, see procedure section below and Kopelman-Rubin *et al.*, 2012). In the previous publication we included measures of internalizing and externalizing symptoms (Kopelman Rubin *et al.*, 2012).

The purpose of the current analysis from the study was to examine changes in attachment orientations towards parents, attachment-related representations of teachers, and feelings of loneliness among adolescents with LD who were treated with ICS. We made the following hypotheses. First, adolescents with LD treated with ICS would score higher on a scale tapping secure attachment to parents after the intervention

and in the follow-up, as compared to the baseline, pre-treatment measurement. Second, adolescents with LD treated with ICS would appraise their homeroom teacher as a more available and accepting figure and a less rejecting figure after the intervention and in the follow-up, compared to the baseline pre-treatment measurement. Lastly, adolescents with LD treated with ICS would report lower feelings of loneliness after the intervention and in the follow-up, compared to the baseline pre-treatment measurement.

## METHOD

### Participants

Participants included 40 adolescents with LD and their parents. Adolescents were self referred or were referred from the hospital or community providers. Table 1 presents the socio-demographic characteristics of the sample.

The sample reported high co-morbidity of other psychiatric disorders. Inclusion criteria consisted of LD diagnosis, normal range IQ, and regular class attendance. Exclusion criteria included suicidal ideation and psychosis. All participants were junior high school students with a mean of 7.4 years of schooling. All of them were from central Israel. The majority of the adolescents came from a middle class socio-economic level and fairly well-educated families (see Table 1 for parents' education). All were diagnosed with various kinds of learning disorders and 77.5% (n = 31) had more than one learning disability, especially co-morbid reading disorder and disorder of written expression. Three adolescents dropped out after the third session and one after the fourth session. These participants were not significantly different from the other participants in their demographic characteristics including age, psychiatric co-morbidity, parents' age, educational level, and SES. Ten participants were treated with medication prior to ICS intervention. During ICS, nine participants started medication while two participants stopped. Sixteen of the participants were on methylphenadate and one was on an SSRI. The study was approved by the IRB committee of Schneider Children's Medical Center of Israel.

### Instruments

**Demographic questionnaire.** The demographic questionnaire included information on age, grade, gender, racial/ethnic background, household composition, and SES.

**Attachment to parents.** Participants completed the 15-item Hebrew adaptation (Granot and Maysless, 2001) of the Attachment Security Style Scale (Kerns, Klepac & Cole., 1996). This scale assesses adolescents' attachment security in parent-child relationships, using Harter's (1982) 4-point "Some kids ...other kids" format. Participants completed two versions of the scale. In one version, they were asked about their relationship with their mother. In the other version, they were asked about their relationship with their father. Previous findings demonstrated the validity and reliability of the Attachment Security Style Scale (Kerns *et al.*, 1996) in early adolescents (Lieberman, Doyle & Markiewicz, 1999). In the current study, the Cronbach alphas ranged from .77 to .90 for the adolescent-mother scale and from .81 to .83 for the adolescent-father scale. On this basis,

**Table 1.** Demographic Characteristics of the Sample

Adolescent Characteristics	N=40	Mean $\pm$ SD or Percentage
Female	N=12	30%
Male	N=28	70%
Age	N=40	12.6 $\pm$ 0.87
Grade	6th grade: N=1 7th grade: N=24 8th grade: N=13 9th grade: N= 2	2.5% 60% 32.5% 5%
IQ (Full Scale)	N=40	95.45 $\pm$ 7.48
Learning Disability Diagnosis (DSM-IV-TR)		
Reading Disorder	N=27	67.5%
Disorder of Written Expression	N=25	62.5%
Mathematics Disorder	N=11	27.5%
Reading & Writing	N=18	40 %
Reading & Writing & Mathematics	N=4	10%
Reading & Mathematics	N=5	12.5%
Writing & Mathematics	N=5	12.5%
DSM-IV co-morbidity Diagnosis:		
ADHD	N=21	52.5%
Anxiety Disorders	N=11	27.5%
Major Depression Disorder	N=3	7.5%
Oppositional Defiant Disorder	N=3	7.5%
Tourette Syndrome and Tic Disorder	N=1	2.5%
Parents and Family Characteristics		
Mother's Age	N=40	43.1 $\pm$ 4.45
Father's Age	N=39	44.77 $\pm$ 5.1
Family Income		
Below average	N=5	12.5%
Average	N=27	67.5%
Above average	N=8	20%
Mother's education level	N=40	14.16 $\pm$ 2.45
Father's education level	N=39	13.71 $\pm$ 2.89

we computed two total scores for each participant by averaging the 15 items in each version of the scale. Higher scores reflect more attachment security toward mother and father.

**Attachment representations of teachers.** Participants completed the 25-item Children's Appraisal of Teacher as a Secure Base (CATSB) scale (Al-Yagon & Mikulincer, 2006). This scale assesses adolescents' perceptions of their homeroom teacher as an attachment figure along a 7-point scale. Previous findings demonstrated the validity and reliability of this scale (e.g., Al-Yagon & Mikulincer, 2004a, 2004b, 2006). The availability and acceptance subscale comprised 17 items, assessing the teacher as caring and as

available in times of need (e.g., "My teacher is always there to help me when I need her"). The rejection subscale comprised 8 items tapping the extent to which the adolescent perceived the teacher as rejecting (e.g., "My teacher makes me feel unwanted"). In the current study, Cronbach alphas ranged from .93 to .98 for the availability-acceptance subscale and from .72 to .92 for the rejecting subscale. On this basis, we computed two total scores for each participant by averaging the 17 availability-acceptance items and the 8 rejecting items. Higher scores reflect appraisals of homeroom teachers as more available-accepting and as more rejecting,

**Peer-Network Loneliness and Peer-Dyadic Loneliness Scale** (PNDLS; Hoza, Bukowski, & Beery, 2000). Participants completed the Hebrew version of this 16-item scale (Al-Yagon, 2011b), which assesses two types of loneliness using Harter's (1982) 4-point "Some kids ...other kids" format. The peer-network loneliness subscale taps feelings of loneliness in social interactions with the network of peers and comprises 8 items, such as "Some kids hardly ever feel accepted by others their age – But – other kids feel accepted by others their age most of the time." The peer-dyadic loneliness subscale taps feelings of loneliness in dyadic interactions with friends and includes 8 items such as "Some kids don't have a friend that they can talk to about important things – But – others kids do have a friend that they can talk to about important things". In the current study, Cronbach alphas ranged from .89 to .92 for peer-network subscale and from .78 to .92 for the peer-dyadic subscale. On this basis, we computed two total scores for each participant by averaging the 8 peer-network items and the 8 peer-dyadic items. Higher scores reflect more feelings of loneliness.

### Procedure

All adolescents went through a comprehensive psycho-educational assessment and a structured psychiatric interview before beginning the ICS intervention. Adolescents completed questionnaires before the ICS Intervention (baseline), at the end of the acute phase (end of treatment), and at a six months follow-up meeting (follow-up).

ICS is a manual-based psychological intervention for adolescents who are diagnosed with learning disabilities. ICS consists of an acute phase (13 once a week sessions) and follow-up phase (total of 6 sessions over 18 months). During the acute phase the ICS protocol includes a meeting at the school where the school teacher is involved. The current study includes the six months follow-up meeting.

The aim of ICS is to promote academic and emotional functioning of adolescents with learning disorders and related psychiatric disorders. ICS addresses three major areas: intrapersonal, interpersonal, and school/community level. In the intrapersonal area, ICS attempts to promote self-awareness of both personal strengths and weaknesses, to develop self-direction towards setting goals and estab-

lishing priorities, and to provide organizational strategies. In the interpersonal area, ICS attempts to improve interpersonal communication, decision making/problem solving, and self advocacy skills (i.e. learning to express what I need and what would help me). In this area, ICS attempts to strengthen the adolescent-parent relationship and adaptive/healthy communication. In the school/community area, ICS attempts to strengthen the family-school relationship by choosing a significant figure at school to support the process (usually the home teacher) and guiding adolescent and parents about effective communication with school staff about school-related issues (the treatment is described in a previous study. See Kopelman-Rubin *et al.*, 2012). Modules such as goal setting and organizational skills are directed toward academic-executive functions, while self-awareness, communication, problem solving and parent training modules target the emotional and interpersonal ones. Psychoeducation, self advocacy and school staff modules are assumed to improve both.

### Data Analysis

All analyses were undertaken using mixed-model analyses with time of assessment as a repeated factor. Analyses were conducted using the SPSS software package, version 19. Results were considered significant at  $\alpha < .05$ .

## RESULTS

### Attachment to Mothers and Fathers

In the mixed-model analyses with three measurement occasion as a repeated factor, changes in attachment security toward father were not statistically significant (see Table 2). Although attachment security to father seems to increase, this improvement was not statistically significant neither between baseline to post-treatment nor between post-treatment and follow-up. As can be seen in Table 2, attachment security to mother was just approaching a significant increase ( $p = .05$ ). Specifically, attachment security to mother significantly increased from baseline to follow up ( $p = .02$ ). It also increased between baseline and end of treatment, but this increase was not statistically significant ( $p = .19$ ).

**Table 2. Attachment Related Measures to Parents, Teacher and Friends at Pre-Intervention, Post-Intervention and at a 6 Month Follow Up**

	Before Treatment Mean (SD)	End of Treatment Mean (SD)	6 Month Follow up Mean (SD)	F	df
Attachment to Father	3.07(0.08)	3.18(0.08)	3.22(0.08)	1.8	2,63.5
Attachment to Mother	3.27(0.07)	3.37(0.08)	3.48(0.08)	3.1*	2,66.8
Acceptance by Teacher	4.88(0.21)	5.32(0.22)	5.52(0.23)	5.36**	2,67.3
Rejection by Teacher	2.12(0.19)	1.70(0.19)	1.66(0.20)	3.78*	2,66.44
Peer Network/social Loneliness	1.67(0.09)	1.55(0.09)	1.43(0.10)	3.00	2,66.43
Dyadic loneliness	1.66(0.10)	1.56(0.10)	1.37(0.11)	4.11*	2,68.04

\*=<.05 \*\*<.01

### Appraisal of the Teacher as a Secure Base

Adolescents' perceptions of teacher's acceptance significantly changed in the mixed model analysis (see Table 2). Specifically, it increased from baseline to end of treatment ( $p = .02$ ) and from baseline to follow-up ( $p = .001$ ). Between end of treatment and follow up, perceived teacher's acceptance remained the same ( $p = .34$ ). Adolescents' perceptions of teacher's rejection also significantly changed in the general mixed model analysis (see Table 2). Specifically, the level of rejection was significantly reduced between baseline and end of treatment ( $p = .02$ ) and between baseline and the follow-up ( $p = .02$ ). Between end of treatment and follow up the appraisal of teacher's rejection remained the same ( $p = .83$ ). We also included open ended question in which adolescent had an opportunity to comment on the intervention. One example with regard to teachers was "I feel improvement in my motivation to learn and in my relationship with teachers in school".

Peer-network loneliness and peer-dyadic loneliness: Network/social loneliness was approaching significance in the general mixed model analysis ( $p = .06$ ). Specifically, the network/social loneliness did not significantly decrease between baseline and end of treatment ( $p = .20$ ), but did significantly decrease between baseline and follow up ( $p = .02$ ). Dyadic loneliness significantly changed in the general mixed model analysis (see Table 2). Similar to social loneliness, dyadic loneliness did not significantly decrease between baseline and end of treatment ( $p = .29$ ), but was significantly reduced between baseline and follow up ( $p = .01$ ).

## DISCUSSION

The main results of the current study indicate that 6 months after the "I Can Succeed" intervention, there was improvement in LD students' attachment security to mothers, appraisals of homeroom teacher as a security-enhancing figure, and satisfaction with relationships with peers and friends (lower loneliness scores). Before we describe the hypothesis it should be noted that this is a feasibility study and results should be considered with caution until an experimental study is conducted.

The first hypothesis was partially supported. The significant change in attachment security to parents was mainly found in the relationship with mother but not in the relationship with father. The significant change in attachment to mother occurs in the time to follow up which is not surprising given that a change in attachment security is a lengthy process (e.g. Mikulincer *et al.*, 2013). It could be that the intensive part of the treatment started the process but changes were more significant after the adolescent and his/her mother continued with the process at home after the acute part of the intervention. This may also be the case in the observed changes in participants' sense of loneliness.

The results regarding difference between attachment to mothers and fathers are in line with a recent study by Al-Yagon (2012), which suggested a possible unique role played by adolescents' attachment to each parent. Specifically, in Al-Yagon's study, a greater number of significant paths emerged between adolescent-mother attachment relationships and adolescents' socio-emotional measures than for

adolescent-father attachment. Moreover, adolescent-mother attachment contributed to all of the adolescents' socio-emotional measures. Our findings are also in line with an additional study by Al-Yagon (2011), which indicated that children with LD reported lower attachment security toward their father as compared to their typically developing peers.

It is possible that attachment to father is based on different experiences (Grossman *et al.*, 2002; Lamb., 2002; Lieberman *et al.*, 1999). Our finding are in line with prior studies indicating that, from early to late adolescence, both female and male adolescents tend to use their father less often than their mothers for support and proximity (see Lieberman *et al.*, 1999 for review). In addition, early studies on families of children with disabilities have described a difference in the maternal and paternal tendency toward their children (e.g. Levy, 1970, Konstantareas & Homatidis, 1989). In light of these earlier studies, one may assume that fathers of adolescents with LD may reduce their involvement and availability in adolescents' daily lives, which in turn may contribute to more impervious patterns of adolescent-father insecure attachment that remain resistant to change after the ICS intervention.

The second hypothesis regarding attachment to teachers was fully supported. Our findings that children perceived teachers as less rejecting and more accepting are in line with findings reported by Al-Yagon & Mikulincer (2004) that a meaningful relationship with teachers is crucial in working with LD students. It is possible that after working on interpersonal skills during the ICS intervention, the child was able to perceive the teacher as more accepting and less rejecting. On the other hand, it could be that the meetings at school and the parents/psychologists work with the teacher affected teacher's actual behavior and pattern of interaction with the LD adolescent. Another option is that both processes occurred simultaneously. In any case, it is interesting that the change in appraisals of teachers was significant at the end of treatment. It could be that the intervention's focus on the LD aspects of the child enabled this immediate change (which continued until follow up). Since the intervention focused less on the relationship with parents, changes in attachment security towards parents may take a longer time. Our results highlight the importance that teachers of LD students act as attachment figures, provide care and support in times of need and become a source of secure base for further exploration and learning (e.g., Al Yagon, 2012; Bowlby, 1973; 1982; Pianta, 1999; Weiss, 1998). Our results are in line with previous studies indicating that teachers' availability/acceptance and teachers' rejection are both linked to children's socio-emotional well-being (Al Yagon, 2012). The results highlight the importance of further examining attachment of children and adolescents to non parental figures and specifically to teachers whom they spend a lot of their time with.

In regard to the loneliness hypotheses, it was found that along with changes in attachment to mothers and teachers, LD adolescents also felt less lonely socially. The improvement in children's feelings of loneliness served as an index of their experience of peer relations and social alienation. This finding in line with a previous study, which reported that children's perception of their teacher as a secure base at

elementary school correlated significantly with feelings of loneliness (Al Yagon & Margalit, 2006).

Our findings are in line with a recent publication by Mikulincer et al. (2013), which highlight that attachment insecurities among adults can be effectively reduced in therapy, and movement toward greater attachment security is central to achieving favorable therapeutic outcomes.

### Limitations, Directions for Future Study, and Implications

The study has several limitations. First, the study included a small sample size of adolescents aged 11–15. Second, this study was a feasibility study. The treatment was delivered in an open clinical trial rather than a randomized controlled trial and therefore, we cannot address questions concerning the comparative efficacy of our intervention and whether or not the improvements made are specific to the interpersonal aspects of the intervention. Third, we did not include an index of severity of the learning disorders. Lastly, the attachments assessments only included self report questionnaires. Future study should include clinical interviews.

Given these limitations, the study does have important clinical implications. One practical implication concerns the use of attachment theory as a foundation upon which to develop effective interventions among children with LD. Interventions should include work on “working models of attachment”, which are mental representations of significant others including both parents and teachers as well as focusing on the actual relationships with these significant others. One option could be further develop a full protocol of interpersonal psychotherapy for adolescents (IPT-A) diagnosed with LD (IPT- ALD) (Mufson et al., 2004a; 2004b).

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### CONFLICT OF INTEREST

The authors confirm that this article content has no conflict of interest.

### ACKNOWLEDGEMENTS

Declared none.

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