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Self-Efficacy, Loneliness, Effort, and Hope: Developmental Differences in the Experiences of Students with Learning Disabilities and Their Non-Learning Disabled Peers at Two Age Groups

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The goals of this study were to (a) examine differences between two age groups of adolescents with and without learning disabilities (LD) in their general and specific self-efficacy beliefs (in history and mathematics), their academic achievement (in history and mathematics), and their loneliness, effort, and hope; and (b) identify predictors of their hopes and future expectations. The sample consisted of 120 students with LD and 160 NonLD students from two age groups: middle and high school. The research instruments included school grades and measures of specific self-efficacy in mathematic and in history, general academic self-efficacy, loneliness, effort and hope. The comparisons of specific academic self-efficacies, general academic self-efficacy, loneliness, and effort investment revealed significant differences between groups of students with and without LD. However, the interactions between grouping (LD/NonLD) and age groups revealed decreased differences between groups for self-efficacy in mathematics, academic self-efficacy, loneliness, and effort investment at the high school level. Different developmental paths were identified for the students with and without LD, although the consistent gap in academic achievement between the two groups remained. Since hope was predicted by students' beliefs about self-efficacy and loneliness, the study demonstrated the important role of subjective perceptions of academic competence and social interrelations for promoting future expectations.

Key Words: Learning Disabilities, Adolescents, Self-Efficacy, Academic Achievement, Hope, Effort, Loneliness.

Many researchers have looked at differences between students with learning disabilities (LD) and their NonLD peers across multiple domains of functioning. Many studies have explored differences in cognitive characteristics and academic achievement, as well as social-emotional variables. Results of multiple studies have found that students with LD, when compared to NonLD peers, have lower levels of academic achievement and more negative social-emotional perceptions (Clever, Bear, & Juvomen, 1992; Frederickson & Jacobs, 2001; Klassen, 2007; Lackaye &

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Margalit, 2006; Sideridis, Morgan, Botsas, Padeliadu, & Fuchs, 2006). However, some comparison studies of self-concept and self-efficacy, as well as of adjustment, have shown inconsistent results (Bear & Minke, 1996; Lackaye, Margalit, Ziv, & Ziman, 2006; Meltzer, Roditi, Houser, & Perlman, 1998; Stone & May, 2002).

In this study, we examined differences between adolescents with and without LD at two age levels in specific self-efficacy beliefs in history (as a subject requiring good reading and language skills) and mathematics, academic achievement in history and mathematics, loneliness, effort, and hope in the differing contextual conditions of middle school and high school. An additional purpose of the study was to examine the predictors of hope and future expectations. We approached the study with the expectation of placing the results in the overall context of adolescent development and of adding to the literature base on social-emotional perceptions of students with LD.

A review of theories does not reveal a single unified conception of the psychological experience of youngsters in the adolescene stage of development. Several theories consider adolescence as a stage characterized by instability and emotional difficulties (e.g., psychoanalytic orientation, sociological approach), while others view adolescence as a period of developmental opportunities and growth (Garaigordobil, 2004). Although adolescence is not necessarily a problematic developmental stage, it does involve risks, as well as opportunities for renewed personal reorganization towards new challenges (Smetana, Campione-Barr, & Metzger, 2006). A recent paradigmatic shift proposes that in examining differential paths of growth during adolescence, it is critical to study interactions between individuals and contexts, together with self-perceptions and self-efficacy beliefs in predicting future achievement (Bacchini & Magliulo, 2003; Caprara, Barbaranelli, Pastorelli, & Cervone, 2004; Eccles, Barber, Stone, & Hunt, 2003). In terms of students with LD, in this study we were interested in whether results would provide support for domain-specific theories of adolescent development.

Social-emotional beliefs provide important information for understanding student involvement in learning. The self-perceptions of students with LD about self-efficacy, loneliness, effort, and hope may be different at different ages and in different contexts. On one hand, it is possible that increased academic demands at the high school level lead to increased stress. On the other hand, since the lives of many students with LD were saturated with stress and academic difficulties at the middle school level, the move to high schools may lead to a reevaluation of their self-perceptions of their abilities and difficulties and to decrease the gap between their perceptions and those of their NonLD peers. The following section provides a brief survey of research on the separate but related perceptions of self-efficacy, loneliness, hope, and effort, especially as these concepts have been related to students with LD.

Self-Efficacy

Self-efficacy represents students' beliefs about their ability to be successful in a particular area (Bandura, 1995, 2001; Woolfolk, 2001). Self-efficacy beliefs are domain-linked knowledge structures that vary across spheres of functioning, rather than a global trait (Caprara, Regalia, Scabini, Barbaranelli, & Bandura, 2004). Self-efficacy beliefs refer to specific and situational judgments of capabilities. As such

they provide an answer to the self-questioning that everybody experiences from time to time (e.g., "Can I do this task?").

A vast body of literature verifies the pervasive influence of self-efficacy beliefs across diverse domains of human functioning, including academic, health, organizational, athletic, and sociopolitical spheres (Bandura, 1997). Individuals are inclined to pursue their goals if they believe in their ability to achieve the desired results by their own actions (Bandura, Caprara, Barbaranelli, Gerbino, & Pastorelli, 2003; Caprara, Regalia, et al., 2004). Further individual characteristics and contextual conditions interact with the individual's self-efficacy, affecting learning and achievement (Narciss, 2004; Robbins, et al., 2004). Lent (2004), in his comprehensive model, suggests that the goals that people set for themselves, their involvement in goal-directed activity, and the progress they make toward their goals can be considered as largely determined by self-efficacy, outcome expectations, and goal-relevant environmental (social) supports and resources.

Bandura (1997) discussed the impact of self-efficacy on development through both cognitive and affective processes. In the cognitive domain, self-efficacy beliefs enhance attention, comprehension, and memory processes. In the affective area, self-efficacy beliefs affect the quality of emotional life and vulnerability to stress and despondency (Bandura, 1997). Students' beliefs about their own capabilities to do school work affect their effort investment and persistence (Linnenbrink & Pintrich, 2003). Individuals with strong efficacy beliefs are more likely to exert effort in the face of difficulty and to persist at tasks when they believe they have the requisite skills (Patrick, Ryan, & Kaplan, 2007; Pietsch, Walker, & Chapman, 2003). Students feel differently about themselves and cope differently with challenges depending on what they believe they are capable of, and what they hope they will be able to achieve (Bandura, Pastorelli, Barbaranelli, & Caprara, 1999; Folkman & Moskowitz, 2004). Researchers have identified the central role of experiences of competence versus incompetence in the development of self-efficacy beliefs (Bong & Skaalvik, 2003), as beliefs and perceptions about self are rooted in one's past achievements, difficulties, academic history, emotional experiences, and social self-efficacy.

The construct of academic self-efficacy posits that self-referent thoughts or beliefs in this area play a central role in predicting behavior (Swann, Chang-Schneider, & McClarty, 2007). Students with high specific self-efficacy are apt to attain higher achievement in a specific subject, whereas those with lower self-efficacy tend to be less successful (Cavallo, Potter, & Rozman, 2004). In the current research we distinguished, and examined separately, verbal and quantitative competence, evidenced by self-efficacy beliefs in history and in mathematics, in the belief that students with specific LD often experience difficulties either in language-related domains or in mathematics, or manifest co-morbidity of difficulties in both domains.

Not surprisingly, when compared to peers, students with LD have reported lower academic self-efficacy as well as decreased academic competence (Clever et al., 1992; Frederickson & Jacobs, 2001; Klassen, 2007; Lackaye et al., 2006; Sideridis et al., 2006). Sources of efficacy expectations are hypothesized to be acquired and modified via four major routes: (a) past performance accomplishment, (b) exposure to

and identification with efficacious models (vicarious learning), (c) access to verbal persuasion and support from others, and (d) experience of emotional or physiological arousal in the context of task performance (Bandura, 1997). These four sources of information about personal efficacy continually and reciprocally interact to affect performance judgments, which, in turn, influence students' performance and effort (Linnenbrink & Pintrich, 2003). In line with this conceptualization, Hampton and Mason (2003) suggest that the low self-efficacy scores that have been consistently found in research on students with LD may not be directly related to their LD difficulties, but rather to a decreased availability of the above-mentioned sources for developing positive self-efficacy beliefs (Hampton & Mason, 2003).

Relatedness and Loneliness

Self-reorganization during adolescence focuses attention on basic psychological needs and their importance in facilitating psychological growth (Deci & Ryan, 2000; Ryan & Deci, 2004). Within any significant life domain, opportunities to experience competence, autonomy, and relatedness (each representing a basic psychological need) are essential for promoting life satisfaction and well-being (Patrick, Knee, Canevello, & Lonsbary, 2007). Students who feel that their psychological needs have been satisfied in school appear to be better adjusted in the classroom, to demonstrate greater internalization of school-related expectations and regulations, to exhibit enhanced performance, and to report more intrinsic motivation than those who find these needs frustrated and alienated in educational environments (Levesque, Zuehlke, Stanek, & Ryan, 2004; Marchand & Skinner, 2007).

Research on loneliness and relatedness has emphasized the importance of subjective experiences. Specifically, lonely and non-lonely students were found not only to engage in similar activities but also to spend equivalent amounts of time alone during the day. Surprisingly, an examination of the two most frequent activities indicated no difference in social context: Lonely and non-lonely students were equally as likely to be doing schoolwork and errands alone as with others (Hawkley, Burleson, Berntson, & Cacioppo, 2003). The unique effect of loneliness on psychological constructs was also evident in ratings of social interactions. Loneliness exerted a unique effect on the quality of social interactions (Hawkley et al., 2003), and was associated with less comfort, intimacy, and understanding during social interactions. Lonely individuals adopt passive coping strategies in their everyday lives (Cacioppo et al., 2000). When the momentary everyday experiences of lonely and non-lonely individuals were compared (Hawkley et al., 2003), lonely individuals reported higher overall stress and threat in response to the circumstances of daily life. Lonely individuals were more likely to evince threat appraisals in everyday events than non-lonely individuals, and they tended to appraise everyday events as more demanding, and themselves as less able to meet these demands, than did non-lonely individuals. All these differences were observed even though the activities and behaviors (e.g., amount of school work, outside employment, leisure activities) performed by the participants did not differ as a function of loneliness.

Students with LD often experience higher levels of loneliness than their peers (Margalit & Al-Yagon, 2002). These experiences of loneliness reflect their social difficulties (Bakker, Denessen, Bosman, Krijger, & Bouts, 2007), but also may play an important role in their ability to identify age-appropriate goals, pathways,

and active coping strategies (Margalit, 1994, 2006). Past experience and future expectations may jointly predict students' motivation. Loneliness and self-efficacy may represent students' frustrations connected to competence and relatedness experiences in the past. The study of hope beliefs may provide an index of students' expectation for the future.

Hope

Hope received attention from the fields of medicine and psychology early in the 1950s and 1960s, when Karl Menninger (1959) and colleagues defined it as positive expectancy for goal attainment. Recent studies have examined the hope construct and its relation to adjustment and effective coping in a variety of stressful situations (Barnum, Snyder, Rapoff, Mani, & Thompson, 1998; Parveen & James, 2007) and for predicting the outcomes of psychotherapy (Irving et al., 2004). Snyder has defined hope as a cognitive set composed of pathways thinking, the perceived capacity to generate strategies for attaining goals, and agency thinking, perceptions involving one's capacity to initiate and sustain movement along the chosen pathways (Snyder, 2000, 2006; Snyder, Feldman, Taylor, Schroeder, & Adams, 2000; Snyder, Wrobleski, Parenteau, & Berg, 2004).

Hope also shares similarities with Bandura's (1997) theory of self-efficacy. Both theories emphasize the importance of goal-related outcomes. Bandura, however, has theorized that the cognitive processing associated with self-efficacy is situation-specific, as opposed to the theory of hope, which emphasizes a persistent, dispositional, global goal-directed cognitive set. Furthermore, Bandura's theory gives more weight to efficacy expectancies (similar to agency thinking), whereas hope theory gives equal weight to both pathways and agency thinking. In a factor-analysis study, hope had a distinct factor structure when compared with self-efficacy beliefs, and it accounted for unique variance in future well-being after the variance accounted for by self-efficacy was removed (Magaletta & Oliver, 1999).

Hope enables students to set valued goals, identify the means to achieve those goals, and summon the drive to achieve them (Snyder, 2002). In line with Snyder's definitions, agentic thinking involves thoughts related to one's success in reaching goals (e.g., "I meet the goals that I set for myself"), whereas pathways thinking involves thoughts about one's effectiveness when pursuing different means and paths to obtain goals ("I can think of many ways to get what I want"). Students with LD reported lower levels of hope, even when matched by their academic achievements (Al-Yagon, 2007; Lackaye & Margalit, 2006). We expect students who report higher levels of hope to be prepared to invest effort in responding to their academic challenges.

Effort

Students' self-efficacy is often related to motivation, engagement, and effort. Only a few studies have examined effortful behavior among students with LD. Defining effort as well as its assessment is difficult since it is a hypothetical construct. The study of effort is dependent on self-reports, and effort varies in terms of intensity and persistence (Yeo & Neal, 2004). Meltzer et al. (2004) reported that during elementary school (grades 3-5), regardless of whether students with LD judged themselves as good or poor students, they viewed themselves as hard workers, who invested much effort in their schoolwork. At the middle school level, differences in

academic self-concept predicted students' perceptions of themselves as hard workers who were willing to make the effort to learn. Differences in academic self-concept significantly predicted middle school students with LD working extremely hard in challenging academic areas, which often demand sustained and intensive effort (Lackaye & Margalit, 2006; Meltzer et al., 2004). It is not clear if students with LD in high schools will continue investing increased effort in their learning, or if, at this stage, they will feel frustrated and exhausted by their difficulties and will decrease their effort investment.

Purpose of the Study

The goals of this study were to compare self-perceptions and achievements of students with and without LD at two age groups, the first year of middle school and the first year of high school. To explore these differences, we compared academic achievement based on grades in mathematics and history and the students' specific self-efficacy beliefs in these two subjects. In addition, we explored their general academic self-efficacy, loneliness, effort investment, and hope. Similarly to the middle school group, we expected students with LD to continue demonstrating their difficulties at the high school level and to report lower levels of hope and self-efficacy. However, in line with resilience models, it was not clear if developmental processes would lead adolescents with LD at the high school level to reappraise their self-perceptions in more positive directions. We also hypothesized that hope would be predicted by specific and general self-efficacy beliefs, as well as by dissatisfaction with social relatedness as manifested by loneliness ratings.

Method

Participants

Participants were 280 students (140 boys and 140 girls) from 10 schools in Israel. Students included 120 students with LD (60 boys and 60 girls), who attended general education classes. The comparison group consisted of 160 NonLD students (80 boys and 80 girls), who attended the same classes as the students with LD. The students were divided into two age groups: 7th-grade students (the first year of middle school in Israel) and 10th-grade students (the first year of high school in Israel). Table 1 presents the number of boys and girls with and without LD in middle schools and in high schools.

Table 1
Number of Students in the LD and NonLD Groups

Groups	LD	NonLD
Middle school (7th grade)	70	80
Boys	35	40
Girls	35	40
High school (10th grade)	50	80
Boys	25	40
Girls	25	40
Overall	120	160

All students with LD in the study were diagnosed with learning disabilities as their primary handicapping condition using Israeli Ministry of Education criteria consistent with the Law of Special Education and Ministry of Education regulations. These criteria include the presence of a Verbal and/or Performance IQ score in the low-average range or above (average ranging from 85 to 120), achievement scores at least one standard deviation below their IQ score in one or more areas of functioning, and evidence of a processing deficit in one or more cognitive or linguistic domains.

The students with LD had been previously identified, via psychoeducational evaluation, as demonstrating learning disabilities in reading, writing, and/or mathematics. All students had difficulties in reading and writing, most often manifested in a slower reading rate and spelling mistakes. In addition, 40 students (33% of the sample) had identified difficulties in mathematics. In line with educational policy, these students were recognized as entitled to learning and testing accommodations, including accommodations on the national Matricular Examinations. Diagnostic evaluations were conducted by the municipality psychoeducational agency and by the psycho-educational team of each school. The students with LD received special assistance from resource teachers during school hours, as well as classroom and testing accommodations (e.g., time extensions, use of a dictionary in English as a second language, no penalty for spelling errors, oral rather than written examinations). The diagnostic assessments included the *Wechsler Intelligence Scale for Children-Third Edition* (Wechsler, 1991) and/or the *Kaufman Assessment Battery for Children* (Kaufman & Kaufman, 1983), the *Bender-Gestalt Test* (Koppitz, 1975), and the Hebrew adaptation of the *Key Auditory Verbal Learning Test* (Vakil & Blachstein, 1993), as well as evaluation of reading and writing levels in Hebrew. Due to confidentiality directives, group data, rather than specific information regarding individual children's disabilities, were available for the study. Students with special difficulties other than learning disabilities were not included. In the large schools, students with LD were spread randomly among classes (about 4-5 students in a class). In the current sample, classes that had only 1-2 students with LD were not included.

Instruments

Grade reports. Numerical grades for mathematics and history were collected at the end of the first semester from the schools' records. These two subjects were selected based on the hypothesis that students with reading difficulties would face special challenges in dealing with lengthy texts such as those presented in history classes, and that students with major difficulties in math would experience the greatest difficulties in mathematics. Grades in each of the subjects ranged from 11 to 100. A grade of 54 or below was considered failure, and a grade lower than 40 was considered a severe failure. In mathematics, 11 students with LD got lower than 40 (9 students among the older group), and from the NonLD group 6 students got grades lower than 40 (4 students among the older group). In history, 7 students with LD received grades lower than 40 (6 among the older group), and among the NonLD group, 7 students got grades lower than 40 (5 among the older group).

Specific academic self-efficacy. The Hebrew adaptation of the *Specific Academic Self-Efficacy Scale* (Zimmerman, Bandura, & Martinez-pons, 1992) con-

sists of six statements describing students' beliefs about how well they can cope with academic tasks in mathematics and six statements describing student beliefs about how well they can cope with academic tasks in history in order to succeed in their studies (e.g., "You can understand what is studied in mathematics/history," "You can study to the test in mathematics/history "). The measure uses a 7-point Likert scale with endpoints of 1 (not sure at all) and 7 (completely confident). Cronbach alphas of .93 for the mathematic self-efficacy measure and .92 for the history self-efficacy measure were obtained.

General academic self-efficacy. The Hebrew adaptation of the *Academic Self-Efficacy Scale* (Zimmerman et al., 1992) consists of 11 statements describing students' beliefs about how they can cope with various academic tasks in order to succeed in their studies and self-regulate their learning activities (e.g., "I can remember what has been studied in class and the textbook"). The measure uses a 7-point Likert scale with endpoints of 1 (not sure at all) and 7 (completely confident). A Cronbach alpha of .87 was obtained for the measure.

Loneliness. The Hebrew adaptation (Margalit, Leyser, Ankonina, & Avraham, 1991) of the *Loneliness and Social Dissatisfaction Questionnaire* (Asher, Parkhurst, Hymel, & Williams, 1990) is a self-report scale for children consisting of 16 primary items tapping feelings of loneliness (e.g., "I have nobody to talk to in my class," "I am lonely") and 8 filler items (e.g., "I like school") that cover various activity areas. The 5-point frequency dimension scale ranges from Never (1) to Always (5); higher scores reflect more frequent feelings of loneliness. The measure has high internal consistency (Cronbach alpha = .86). A coefficient alpha of .90 was obtained.

Hope. The Hebrew adaptation of *The Children's Hope Scale* (Snyder, 2002) consists of six statements to which children respond on a 6-point Likert scale ranging from 1 (none of the time) to 6 (all of the time). There are three agency items (e.g., "I think I am doing pretty well") and three pathways items (e.g., "I can think of many ways to get things in life"). Internal consistency (Cronbach alphas) for the overall scale range from .72 to .86, with a median of .77 and test–retest correlations

Effort. The goal of this scale is to tap students' self-ratings of investment and effort (Margalit, 2004). The global score reflects self-perception of effort. The scale was adapted from the Meltzer scale for effort (Meltzer et al., 2004) for use in Israeli schools. The current scale consists of four items (e.g., "I don't give up even when it is difficult to me") on a 6-point frequency dimension scale with responses ranging from 1 (never) to 6 (always). A Cronbach alpha of .78 was obtained.

Procedure

Students completed the set of questionnaires as a group in their classrooms at the middle of the second semester. Teachers identified the students with LD. Grades for the different subjects were taken from school records at the end of the first semester. Parental consent was requested and received along with approval from the Ministry of Education. Students who did not agree to participate or whose parents did not provide consent were not included in the study.

Statistical Analysis

The Statistical Package for Social Sciences (SPSS 14.01) was used for computing descriptive statistics, reliability coefficients (Cronbach alpha) for the research instruments and bivariate correlations to examine the relations between grades, self-

efficacy, and hope. In addition, in order to compare between groups and age groups, tests of analyses of variance were performed, including Partial Eta^2 and Cohen's *d* as an estimate of effect size (Cohen, 1988; Onwuegbuzie, Levin, & Leach, 2003). Hierarchical multiple-regression analyses were performed to examine the predicted factors in the hope model.

Results

Relations Between Variables

Bivariate correlations were performed separately for the students with LD and the NonLD group (see Table 2). Significant correlations were found between achievement in history or in mathematics and the specific related self-efficacy measure in each of the subjects, and not with the self-efficacy measure of the second subject. The general academic self-efficacy measure was significantly correlated with most remaining variables for the students with LD (except their two areas of academic achievement), and with all the remaining variables for the NonLD group. The loneliness score was significantly and negatively correlated with general academic self-efficacy in both groups, and the hope measure correlated significantly with all measures of self-efficacy in both groups of students.

Table 2
Pearson Correlations Between Variables for Students With and Without LD

	1	2	3	4	5	6	7
1. Mathematics	—	.27**	.18*	-.06	-.07	.09	-.02
2. Mathematics Self-Efficacy	.34**	—	-.12	.35**	.33**	-.15	.46**
3. History	.52**	.17*	—	.22*	-.03	.20*	-.05
4. History Self-Efficacy	.06	.32**	.45**	—	.42**	-.15	.46**
5. Academic Self-Efficacy	.24**	.40**	.34**	.54**	—	-.35**	.54**
6. Loneliness	.11	-.08	.08	-.15	-.26**	—	-.42**
7. Hope	.05	.32**	.16*	.50**	.47**	-.46**	—

NonLD Group *N* = 160.

Note. Students with LD: *N* = 120.
*$p < .05$. **$p<.01$.

Comparisons Between Students With and Without LD at Two Age Groups

Grades. In order to compare grades in mathematics and history between students with and without LD, a MANOVA was performed with the students' grades in mathematics and history as the dependent variable, and the LD/NonLD groups and 7th/10th grades as the independent variables. The results revealed a main effect for the groups, $F(2, 275) = 20.08$, $p < .01$, partial eta^2 = .127, and a main effect for the class level, $F(2, 275) = 7.89$, $p < .01$, partial eta^2 = .054. Students at the middle schools reached higher grades both in mathematics and in history (mathematics, $F(1, 276) = 12.44$, partial eta^2 = .043; history, $F(1, 276) = 8.81$, partial eta^2 = .031; middle schools: mathematics, $M = 72.02$, $SD = 17.58$, history, $M = 73.64$, $SD = 16.63$; high schools: mathematics, $M = 64.17$, $SD = 21.24$, history, $M = 68.43$, $SD = 20.34$).

Means, *SD*, and *F* scores for univariate analysis of variance of the LD/NonLD comparisons are presented in Table 3. Students with LD as a group got

lower grades than the NonLD group in both mathematics and history (medium effect sizes). In addition, both LD and NonLD groups reported lower grades in high school than in middle school. The gap between LD and NonLD groups remained constant.

Self-efficacy. In order to compare the specific self-efficacy beliefs in mathematics and in history between students with LD and the NonLD group, a MANOVA was performed with the students' self-efficacy in mathematics and history as the dependent variables and the LD/NonLD groups and 7th/10th grades as the independent variables. The results revealed a main effect for the groups, $F(2, 275) = 9.98$, $p < .01$, partial eta$^2 = .068$. The interaction of class by groups was $F(2, 275) = 3.96$, $p < .05$, partial eta$^2 = .028$.

Means, *SD*, and *F* scores for the ANOVA of the LD/NonLD comparisons are presented in Table 3**.** Overall, students with LD as a group showed lower specific self-efficacy beliefs than the NonLD group in both subjects (a medium effect size for history and a small effect size for mathematic self-efficacy).

In order to compare general academic self-efficacy between students with LD and the NonLD group, an ANOVA was performed with the students' general academic self-efficacy as the dependent variable and the LD/NonLD groups and 7th/10th grades as the independent variables. The results revealed a main effect for groups, $F(1, 276) = 16.82$, $p < .01$, partial eta$^2 = .057$, and significant interactions for class by groups, $F(1, 276) = 9.03$, $p < .01$, partial eta$^2 = .032$. The remaining comparisons were not significant.

Means, *SD,* and *F* scores for univariate analysis of variance of the LD/NonLD comparisons are presented on Table 3**.** The interactions are presented in Figure 1.

Students with LD reported higher self-efficacy in 10th grade than they did in 7th grade, and the NonLD group revealed lower self-efficacy in 10th grade than in 7th grade. As expected, students with LD reported lower self-efficacy than the NonLD group in 7th grade (a medium effect size). It can be concluded that for general academic self-efficacy, the differences between the LD and NonLD groups decreased at the high school level.

Loneliness. In order to compare the experience of loneliness between students with LD and the NonLD group, an ANOVA was performed with the students' ratings of loneliness as the dependent variable and the LD/NonLD groups and 7th/10th grades as the independent variables. Significant interactions were found for class by groups, $F(1, 276) = 4.03$, $p < .05$, partial eta$^2 = .014$. The group and class main effects were not significant. Means, *SD,* and *F* scores for univariate analysis of variance are presented on Table 3 and the interaction in Figure 1. The results demonstrated that the students with LD felt higher levels of loneliness than the NonLD group at the middle school. No significant differences were found at the high school level.

Effort. In order to compare self-perceptions of effort investment, an ANOVA was performed with the students' ratings of effort as the dependent variable, and the LD/NonLD groups and 7th/10th grades as the independent variables. The results revealed a main effect for the groups, $F(1, 276) = 6.72$, $p < .01$, partial eta$^2 = .024$. Significant interactions were found for classes by groups, $F(1, 276) =$

5.28, $p < .01$, partial eta^2 = .019. The class main effect was not significant. Means, *SD* and *F* scores are presented in Table 3. The results demonstrated that the students with LD reported lower levels of effort than the comparison group (a small effect size). The interactions revealed a smaller gap at the high school level.

Hope. In order to compare self-perceptions of hope, an ANOVA was performed with the students' ratings of hope as the dependent variable, and the LD/NonLD groups and 7th/10th grades as the independent variables. The results revealed a main effect for the groups, $F(1, 276) = 9.89$, $p < .01$, partial eta^2 = .035. The grade main effects and the interactions were not significant.

Table 3
Means, SD, and F Scores of ANOVAs Between Students With and Without LD

Variable		LD	NonLD	*F*(1, 276)	Partial Eta^2	Cohen's *d*	Mini-Max
Schools' Grades							
Mathematics	*M*	63.09	72.34	17.75**	.062	0.48	11-100
	SD	19.10	19.31				
History	*M*	64.35	76.37	35.14**	.113	0.68	11-100
	SD	17.84	17.49				
Mathematics SE[1]	*M*	29.90	32.24	5.29**	.022	0.28	6-42
	SD	8.49	8.14				
History SE[2]	*M*	30.26	34.15	19.24**	.065	0.53	6-42
	SD	7.38	7.23				
Academic SE[3]	*M*	57.10	63.57	16.26**	.056	0.50	18-84
	SD	13.59	12.21				
Loneliness	*M*	27.42	25.45	1.96	.007	-0.21	16-70
	SD	10.19	8.99				
Effort	*M*	17.33	18.56	6.72**	.024	0.32	5-24
	SD	3.90	3.81				
Hope	*M*	25.18	27.10	9.89**	.035	0.38	11-36
	SD	5.26	4.76				

**$p < .01$.

[1] Mathematics SE - Self-Efficacy in Mathematics.
[2] History SE - Self-Efficacy in History.
[3] Academic SE - General Academic Self-Efficacy.

Figure 1. Interactions of academic self-efficacy means between LD/ NonLD and age groups.

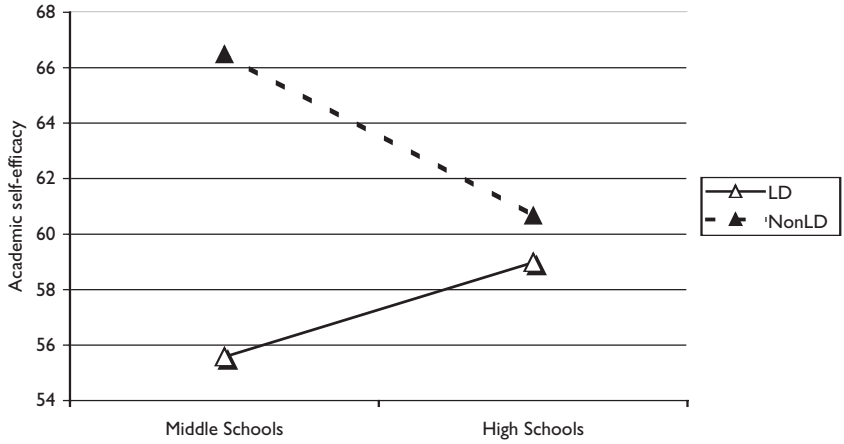
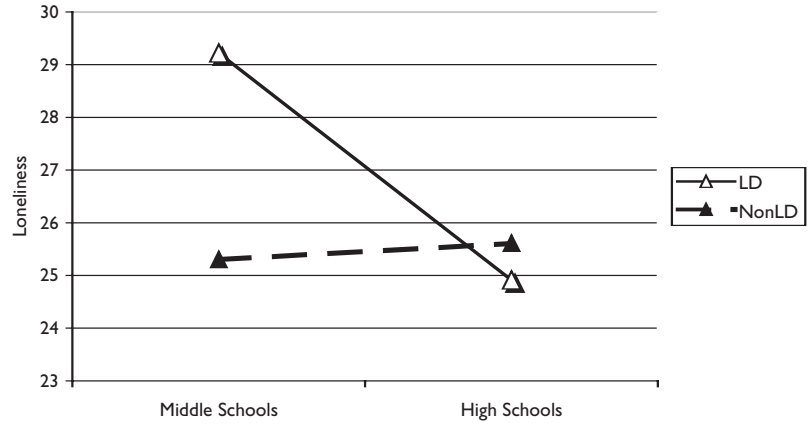


Figure 2. Means of loneliness interactions between LD/NonLD and age groups.



Means, *SD*, and *F* scores for univariate analysis of variance are presented in Table 3. The results demonstrated that the students with LD felt lower levels of hope than the comparison group (a small effect size). The scores for hope ranged from 11 to 36. In order to compare the distribution of the hope levels, the scores of the whole group were divided into five equal groups. The comparisons revealed a significant difference, X^2 (4 *df*) = 12.63, $p < .01$. The distribution of hope scores for the LD and NonLD groups are presented in Table 4. Students with LD as a group revealed lower levels of hope, although a small group of students with LD (15%) held the highest levels of hope.

Predictions of Hope

In order to examine the variables that predict students' hope, a hierarchical multiple-regression analysis was performed with students' ratings of their hope beliefs as the dependent variable. To control for LD/NonLD groups (which was dummy coded 0, 1) and academic grades in mathematics and history, they were entered at the first step. They accounted for only 3.9% of the variance, as presented in Table 5. In line with the hope model, we assumed that the specific and general efficacy measures would add to the prediction of students' hope.

Recognizing the important role of social interrelations at this age, the loneliness score (as a measure of social dissatisfaction) was entered to the prediction at this step. Thus, the self-efficacy measures for mathematics and history, the general academic self-efficacy measure, and the loneliness measure were entered as the second step, adding 34.0% to the variance. Differentiation between LD and NonLD students did not add significantly to the variance after the contribution of self-efficacy beliefs and loneliness. Two additional hierarchical regressions were performed separately for each age group, revealing similar results. It can be concluded that beliefs about competence and learning skills, as well as social satisfaction, all predicted the level of hope.

Table 4

Distribution of Hope Levels Among Students With LD and Without LD

Percentile	Range of Scores	No of Students with LD	No of NonLD Students
1	11-21	29 (24.2%)	23 (14.4%)
2	22-25	35 (29.2%)	30 (18.8%)
3	26-28	22 (18.3%)	33 (20.6%)
4	29-30	16 (13.3%)	35 (21.9%)
5	31-36	18 (15.0%)	39 (24.4%)
Total	11-36	120 (100%)	160 (100%)

Table 5

R, R^2, and BETAs of the Hierarchical Multiple Regression Predicting Hope as the Dependent Variable

Steps		R^2	Beta in Step 2
Step 1:	LD/NonLD Groups	.04	-.02
	Mathematics		-.01
	History		-.04
Step 2:	Mathematics SE[1]	.48	.18*
	History SE[2]		.32**
	Academic SE[3]		.20**
	Loneliness		-.31**

*$p<.05$. **$p<.01$.

[1] Mathematics SE - Self-Efficacy in Mathematics.

[2] History SE - Self-Efficacy in History.

[3] Academic SE - General Academic Self-Efficacy.

Discussion

This study examined age differences among students with and without LD from a developmental perspective in specific and global self-perceptions related to academic and interpersonal functioning. The results supported our hypotheses in part. Comparisons of specific academic self-efficacies, general academic self-efficacy, loneliness, and effort investment revealed significant differences between groups of students with and without LD. However, the interaction between age groups and LD/NonLD grouping showed the most pronounced differences at the younger age group – students in middle schools. Decreased differences among groups of students were noted at the high school level for self-efficacy in mathematics, general academic self-efficacy, loneliness, and effort investment. When confronted with the increased challenges of the high school environment, the NonLD group reported lower mathematics self-efficacy and decreased effort investment, while the group of students with LD, who already faced severe difficulties at the middle school level, remained relatively stable.

Loneliness revealed a unique picture. The level of loneliness for students with LD was lower in high school than in middle school, while the high school NonLD group reported a stable level of loneliness, similar to their peers in middle school. Perhaps students with LD felt more alienated when they moved from the small, more intimate and supportive elementary schools to the larger and more challenging middle schools. Perhaps the move to high school, which may be seen in many ways as a continuation of the pressures of middle school, was less threatening to students with LD, who had experienced increased stresses at an earlier stage.

The discrepancy between the groups of students remained significant at both age groups for grades in mathematics and in history, as well as in the global measure of hope. It seems that regardless of the help and the accommodations that students with LD received during their schooling years, their academic achievement remained lower than that of the NonLD group, and they continued to experience lower levels of hope for a better future. In addition, the discrepancy between the two groups of students at the two age groups remained significant in self-efficacy in history. Students with LD continued to experience lower self-efficacy in history studies, perhaps reflecting their prolonged difficulties in subjects that demand and emphasize language mastery.

The results also demonstrated three general developmental paths. First, the group of students with LD expressed lower levels of loneliness at the 10th-grade level, while the NonLD age groups showed a similar level of loneliness. Second, the older group of NonLD students showed a decreased experience of competence in mathematics self-efficacy, general academic self-efficacy, and effort investment, while the LD age groups showed similar levels of self-efficacy and effort. Third, consistencies were found in the discrepancy between the LD and NonLD groups at the different grade levels, with the students with LD displaying lower academic achievement, lower self-efficacy in history, and a lower level of hope. These findings did not clarify the major developmental question of whether the mechanisms that underlie development in students with LD are domain specific or can be treated as revealing general trends. Our findings provide only partial support for domain-specific theories, calling for future examination of this dilemma.

Psychological experience is marked by two features that appear to be contradictory, but are in fact complementary (Cervone, 2004). The first is change. The contents of consciousness, feelings of competence, experiences of difficulties, and other self-perceptions change within different contexts, and as a reaction to different age challenges and demands. The second feature is consistency. Across time and place, individuals act in a consistent manner. They tend to exhibit unique patterns of thought, emotion, and expectations.

Changes in development are often presented by using stage terminology (Margalit, 2003). A key assumption of the stage approach hypothesizes that individuals move from a lower step to a higher one, leaving earlier steps or stages behind while adopting new ones. The wave model (Siegler, 1996, 1997) proposes an alternative approach, viewing change as a more dynamic construct, with successive, overlapping waves, each cresting at a somewhat different time of development. Rather than a linear conceptualization, the wave model proposes that several modes and levels of development may appear within the same time frame. Abilities do not emerge and develop in an all-or-nothing fashion, and variability has to be considered in the emergence of different competencies (Siegler, 1996).

The results of the current study provides some support for the application of the wave model to the understanding of the uneven growth paths of the children with LD who showed a differential rather than a unified general process. It seems that these children with LD, who were more challenged by the demands of middle school than the comparison group, showed a gradual adaptation in various domains to the academic and social stresses of high school. This variability calls for more in-depth examination of longitudinal changes. However, these results have a special meaning not only for the conceptualization of learning disabilities adaptation processes, but also for educators and professionals who follow their students' development and sometimes feel frustrated when faced with inconsistencies and different developmental paces and paths in different domains.

In recognition of the importance of hope in promoting students' motivation and effort, we were concerned by the consistently low expectations of hope expressed by students with LD. Recently, Kotzer and Margalit (2007) further confirmed this consistency in a short-term longitudinal study of students with LD. In order to fully understand the roots of hope beliefs, we identified factors that predict hope. The analysis revealed that neither academic achievement nor belonging to the LD/NonLD groupings predicted hope beliefs. Rather, the joint impact of specific and general feelings of efficacy and the experience of loneliness and social dissatisfaction were related to the levels of hope. Indeed, the self-efficacy measures embodied the differentiation between the LD and NonLD groups. But it should remain a focus of concern that this group of youngsters with LD, who received many types of help, accommodations, and support, continued to experience not only lower achievement, but also lower levels of hope. The challenge of promoting hope among students with LD is an endeavor ripe for further exploration and research. Interventions that target and challenge the hope beliefs of students with LD will further identify and clarify ways of bringing meaningful changes. In the case of students with LD, future intervention planning should explore ways of targeting hope and loneliness in empowering programs that make the desired changes stable and more

general. In addition, the question of domain-specific or general developmental changes should continue to be a goal of future developmental research.

The current study has several limitations. The cross-sectional nature of the data precluded any firm inference about developmental processes. Extended longitudinal studies are needed to clarify the developmental trends of these youngsters. Larger samples may enable a closer look at subgroups with different developmental paths to enable firmer conclusions. In addition, the current study emphasized the importance of subjective self-perceptions for explaining hope and effort. In order to further clarify these aspects, in-depth interviews are needed. Students' diaries may also be very valuable in studying day-to-day variations in order to clarify the role of different contextual conditions for understanding the well being of students with LD.

Additionally, the current study explored factors that predict different levels of general hope expectations. Exploration of specific hopes in different domains may spell out the distinct and differential roles of diverse tasks, contexts, and challenges. Another approach to fully understand the developmental paths of these future expectations will be to conjoin this work with current approaches to focused dynamic evaluation of remedial attempts at challenging the low hopes of students with LD, similar to therapeutic approaches suggested for adults (Snyder, Lehman, Kluck, & Monsson, 2006).

In conclusion, students with LD face many challenges that are not limited to their objective academic difficulties. Studies of subjective perceptions, based on past experiences as well as future expectations, may provide extended opportunities for improving the well-being and resilience of students with LD, as well as expanding research and intervention possibilities.

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