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## Emotional and Motivational Problems in Spanish-Speaking Adolescents with Reading Disabilities

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### Abstract

Students who have trouble in learning to read become a risk group as they experience more difficulties associated especially to emotional and motivational levels. Therefore, to characterize the emotional and motivational problems of adolescents with reading disabilities, 19 adolescents with reading disabilities were compared to 20 adolescents with normal development. The participants were balanced in chronological age, gender and IQ. All participants were interviewed. They self-reported anxiety, manifested depressive symptoms, self-concept, causal attributions for success / failure and motivation for reading. Overall, no significant differences were found regarding anxiety or depressive symptoms between adolescents with reading disabilities and adolescents in the control group. The ANOVA results show that adolescents with reading disabilities had a significantly lower academic self-concept and more extrinsic and intrinsic reading motivational problems. The participants also showed signs of a maladaptive attributional pattern. That is, adolescents with reading disabilities attribute their successes less to ability rather than external factors. They associate failure with lack of ability and bad luck. The results are discussed in relation to the specialized literature. The paper highlights the need to include an evaluation of the emotional and motivational aspects within a more comprehensive framework of assessment among students with learning disabilities.

**Keywords:** Dyslexia; Adolescents; Emotional; Motivational

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### Introduction

Reading disabilities, although traditionally defined in terms of academic and cognitive disabilities, are also associated with a wide range of emotional, motivational, social and mental problems, due to intra and interpersonal weaknesses caused by these disabilities [1-3]. In fact, more than half of the children diagnosed with dyslexia have, in comorbidity, at least one other disorder [4].

The repeated experiences of failure faced by students with specific learning disabilities seem to increase their vulnerability to experience internalized disorders such as anxiety and depression [5]. In this sense, the meta-analysis [6] clearly shows that students with learning disabilities show higher depression scores, although only 2% of them reach clinical depression levels. Other meta-analysis [7] reports more symptoms of depression regardless the source of information (self-report, parents,

teachers). Likewise, some recent studies also show higher levels of depression in students with learning disabilities in reading [8,9]. Studies that have focused on analyzing the symptoms of anxiety in students with learning disabilities show similar results. Thus, a different meta-analysis [10] concludes, with a moderate effect size, that 70% of students with reading disabilities have more anxiety problems. Likewise, recent studies report higher anxiety problems in students with reading disabilities [8,9]. However, it is controversial whether internalizing disorders remain present in adolescence and adulthood or whether they decrease with age. Accordingly, some studies suggest that students with specific learning disabilities continue to experience internalizing disorders. For instance, the study [11] shows that 14.2%, both children and adolescents, experienced severe depression and 23.8% of them showed severe anxiety problems. The results of a current meta-analysis [12] with young adults support the continuity of internalizing disorders, as adults with reading

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disabilities continue to present such disorders in a similar way to that of children and adolescents. However, other studies indicate that difficulties decrease in students with learning disabilities as age increases. In concordance with the results of other studies, research does not find difficulties of anxiety and depression in adolescents with reading disabilities [13-15].

On the other hand, numerous studies have found a lower self-concept in students with specific learning disabilities, presumably caused by their academic difficulties. A pioneering meta-analysis [16] concluded that students with specific learning disabilities showed a lower academic self-concept in comparison to their peers' without disabilities. Other researchers [17] came to the same conclusion in a study carried out with mainly Hispanic adolescents with learning disabilities. Other researcher [18] reached the same conclusion in a study carried out with Jordanian students with or without learning disabilities. However, they did not find difficulties regarding the global self-concept. Similarly, the meta-analysis carried out in a different study [19], with 61 participants, confirms a lower academic self-concept among students with reading disabilities. On the contrary, some studies have revealed a lower global self-concept [20-24] and even some studies have not found differences in the self-concept among children with and without learning disabilities [25], nor with adolescents with and without reading disabilities [13], neither among adults with and without learning disabilities [26].

Likewise, probably because of repeated experiences of failure when performing academic tasks, sometimes reinforced by failure repetition, students with learning disabilities have maladaptive attributional style patterns. They attribute their success to external causes (e.g. luck, simplicity of the task,...) and they tend to attribute their failure to more internal and uncontrollable causes like low capacity as stated by a large body of research [27-29]. However, the origin of these maladaptive attitudes is controversial as many social variables can influence such behavior; for instance, expectations of teachers, parents, as well as culture. Further to their own repeated experiences of failure, the influence of teachers' expectations can also have an effect on such maladaptive attitudes. For instance, a student who receives additional help from a teacher when performing a task may perceive this help, as he is less able to do the activity. Thus, a study [30] has confirmed that secondary school teachers show more attitudes that are negative towards students with learning disabilities. This causes these children to think that they are less able than their peers without learning disabilities.

It has also been shown how culture influences teachers' attributions since different attributional patterns have been found in different countries such as Australia, China, USA and Guatemala [31,32]. Notably, researchers [32] found that American teachers tended to use effort-based attributions to explain the successes and failures of their students, while Latin American teachers base their attributions to ability. The study also analyzed the attributions of parents of children and adolescents with reading disabilities. Accordingly, parents of children with dyslexia have expectations that are more negative. They are more reluctant to attribute their children's successes to ability than the mothers of children without disabilities [33]. Parents of adolescents with

reading disabilities have even lower expectations about their children [29]. However, there are studies that suggest that at least some students with learning disabilities show they have an adaptive attributional pattern [34,35].

Finally, motivation is a key element in learning, especially in school since it normally requires student's efforts in hours of study or other academic tasks. Specifically, the influence of motivation towards a successful learning process to read is well reputable [36-38]. In the case of students with specific learning disabilities, their maladaptive attributions play a critical role in their process of learning since they tend to distrust their abilities. More specifically, a recent study [39] has shown that children with dyslexia had more perceptions that are negative about themselves as readers: they found themselves less competent in reading, had more difficulty with reading, and liked to read less than their peers did. Therefore, children with developmental dyslexia may be less motivated to participate in reading activities. Likewise, teachers of children with dyslexia consider that they have less reading motivation, whether extrinsic or intrinsic, than their peers without disabilities. They are also less involved in reading activities [40]. Likewise, the studies have also confirmed that children with specific reading disabilities feel less competent and have less reading motivation (intrinsic, extrinsic, and social) than their peers without disabilities [41]. In adolescents with reading disabilities, there is also evidence of less motivation and less commitment to reading achievement [42].

For the reasons above, the present study aims at characterizing the emotional and motivational problems of Spanish-speaking adolescents with difficulties in reading. Specifically, the study seeks to analyze these participants anxiety problems, depressive and self-concept problems, reading motivation, and the causal factors participants with reading disabilities consider contribute to success and failure.

## Methods

### Participants

The sample consisted of 39 Ecuadorian adolescent participants, selected from the last high school class. The control group consisted of 20 participants, 8 females and 12 males with a mean age of 17 and a standard deviation of 0.59. All of them with intelligence within the normal range and with adequate reading abilities. Participants with a low academic performance record and / or educational needs associated with some type of disability were excluded.

The group with reading disabilities consisted of 19 participants, 14 men and 5 women, with a mean age of 16.85 and a standard deviation of 0.52. The participants were selected in three cities (Azogues, Cuenca and Guayaquil), 13 of them already had a previous diagnosis of developmental dyslexia. The criteria used in selecting the group of participants with reading disabilities followed the diagnostic guidelines of DSM-5 [43]: a) Non-verbal intelligence of 80 or above in the general capacity test (Factor "g") [44]. b) Significantly low reader performance in the application of the individual test: Processor Readers Battery (Batería de Evaluación de Procesos Lectores) PROLEC-SE (as per its Spanish

acronyms) [45]. Specifically, students who had a percentile of 25 or below (Pc 25) in the word reading and / or pseudo-word reading subtest were selected. In order to interpret the reading behavior of the groups, we calculated reading and word reading indexes of pseudo-words, dividing the hits in each of the scales by the time used in the reading, and multiplying the result by 100.

c) Eligibility criteria: Those participants with a history of brain injury or neurological problems, sensory deficiencies, school absenteeism, intellectual disability, as indicated by the DSM-5 were not included in the study [42]. There were no differences between groups in: gender,  $\chi^2_{(1)}=0.821, p>0.05$ ; age,  $F_{(1,38)}=0.737, p>0.05, \eta^2=0.002$ ; non-verbal intelligence,  $F_{(1,38)}=2592; p>0.05; \eta^2=0.008$ . Both groups of participants differ in their reading skills. The participants in the group with reading disabilities obtain significantly lower scores than those in the control group, in the reading index of words,  $F_{(1,38)}=55.502, p<0.000, \eta^2=0.60$ , in the reading index of pseudo words,  $F_{(1,38)}=66.615, p<0.000, \eta^2=0.64$ , with a high effect size.

In order to carry out the evaluation of the adolescents, parents signed a written consent form, in which they were informed of the objectives of the study, the confidentiality of the data, the participation and voluntary withdrawal of the study, according to the ethical parameters in regard to research with human beings declared in Helsinki.

## Instruments

**Intelligence:** Test factor "g" de Cattell y Cattell. Scala 3 for adults [44] was used.

It evaluates intelligence as a general mental capacity, or "g factor". Through nonverbal tasks, the variable eliminates the influence of already crystallized abilities such as verbal fluency and other acquired learning. It consists of four subtests: series, classification, matrixes and conditions. The subtests involve cognitive operations of identification, perceptual similarities, seriation, classification, matrixes and comparisons. They include different perceptual contents in order to avoid the influence of perceptive differences in the results of intelligence measure. The test has 0.86 reliability, and 0.68 correlation with the Test de Aptitudes Escolares (school Aptitude Test) [46], which measures verbal aptitude, reasoning and numerical aptitude.

**Reading performance:** As indicators of reading accuracy, the lexical processes, word reading and pseudo-word reading subtests from the Reading Assessment Battery [45] were used. The test requires the correct identification of 40 words and 40 pseudo words at different length, frequency, and graphical complexity (CCV, CVV, CVC, CCVC, CVVC, VC). In both cases, the total punctuation was calculated by assigning a point to each correct answer. The amount of time used in the reading was registered in the seconds used during the reading.

**Reading motivation:** The Adult Motivation Scale was used [47]. This scale evaluates general motivation to reading through a Likert scale. This scale consists of 21 items grouped in four subscales:

a) Reading as part of Self (8 items), which assesses the importance of reading in one's life and indicates the intrinsic motivation (e.g. "Without reading, my life would not be the same" and "I set a

good model for others through reading"

b) Reading as a Successful challenge (6 items), which covers the intellectual challenges of reading and the enjoyment of reading difficult material. It is a sign of intrinsic motivation (e.g. "If a book or article is interesting, I don't how hard it is to read" and "I don't like reading technical material").

c) Reading for acknowledgement (3 items), which relates to the desire to amaze others with personal reading skills and knowledge gained from reading. It is a sign of extrinsic motivation (e.g. "It is important to me to get compliments for the knowledge I gather from reading").

d) Reading to do well in other realms (4 items), which is related to the importance of reading in other fields. It is a sign of extrinsic motivation (e.g. "If I am going to need information from material I read, I finish the reading well in advance of when I must know the material" and "I read to improve my work or university performance"). The reliability of the global scale was adequate (Cronbach's  $\alpha = 0.89$ ), as well as for the different subscales ((Cronbach's  $\alpha = 0.73$  to .89)

**Causal attributions:** Causal attributions were assessed from the model of situations [48-50]. Particularly, four situations were analyzed, two of success and two of failure. Participants had to evaluate the importance of four factors in the explanation of their success or failure in that situation: capacity, effort, luck and help using a Likert scale (1 to 5), where 1 indicates strongly disagree and 5 strongly agree. For instance, if you do a reading assignment, is it probably because: I have talent (ability)? If you do not do a reading assignment, is it probably because: I do not work hard (effort)?

**Anxiety:** The State-Trait Anxiety Inventory (STAI) [51] was used. The questionnaire evaluates two independent concepts of anxiety, each with 20 questions:

a) Anxiety as a state (A / E as per its Spanish acronyms). This part evaluates a transient emotional state characterized by subjective, consciously perceived feelings of attention and apprehension, and hyperactivity of the autonomic nervous system.

b) Anxiety as a trait (A / R as per its Spanish acronyms). This part indicates an anxious, relatively stable propensity that characterizes individuals with a tendency to perceive situations as threatening. The manual provides good internal consistency, between 0.84 to 0.93, as well as positive correlations with other anxiety indicators.

**Depressive symptomatology:** The IDER Status / Trait Inventory [52] was used to identify the degree of affectation (state) and frequency of occurrence (trait) of the affective component of depression. The inventory contains 20 affirmations. 10 of them identify depression as a state and the other 10 identify depression as a trait. The inventory provides coefficients of reliability ranging from 0.81 to 0.92, as well as adequate validity.

**Self-concept:** The AF-5 scale [53] was used to analyze the perceptions that the participants have about themselves. 30 questions, graded on a quantitative scale between 1 and 99 according to the degree of agreement with the phrase of self-

concept. The instrument explores the following five dimensions or items for self-concept: academic-labor, social, emotional, family and physical. The academic-labor dimension analyzes the perception that the person has in this field. The social dimension, the appreciation of social relations. The emotional dimension quantifies the aspects related to the habitual emotional situation and the response to the events of daily life; the family part measures the integration and participation in the sphere of family life. Finally, the physical dimension allows the researchers to know the importance that the participant gives to their appearance and physical condition in general. The alpha coefficient for internal consistency is 0.81.

## Results

The analysis of variance (ANOVA of comparison) between groups was carried out after checking that the data met the criterion of statistical normality. The Kolmogorov-Smirnov test was applied. For interpretation purposes, the Bonferroni correction (0.05/18=0.002) was applied to determine significance levels that would be considered significant. In addition, the effect size was provided by the eta square ( $\eta^2$ ), considering values between 0.01 and 0.10 as a small effect, between 0.10 and 0.30 as a median effect and values greater than 0.30 as large effects.

The results of the ANOVAs (**Table 1**) indicate that there are no significant differences between the groups concerning the internalizing problems. In this way, the results do not indicate differences between the groups in state anxiety,  $F_{(1,38)}=0.59$ ,  $p>0.05$ , nor in feature anxiety,  $F_{(1,38)}=0.000$ ,  $p>0.05$ . In the same line, there are also no differences between groups in depression as a state,  $F_{(1,38)}=0.091$ ,  $p>0.05$ , in depression as a trait,  $F_{(1,38)}=0.516$ ,  $p>0.05$ .

Regarding self-concept, participants with reading disabilities score lower than those in the control group (**Table 2**). However, there are only significant differences in academic / work self-concept,  $F_{(1,38)}=24.18$ ,  $p=0.000$ ,  $\eta^2=0.395$ , with a large effect size. Regarding the dimensions about self-concept, no significant differences were found in the social self-concept,  $F_{(1,38)}=0.47$ ,  $p>0.05$ , in the emotional self-concept,  $F_{(1,38)}=0.21$ ,  $p>0.05$ , in the family self-concept,  $F_{(1,38)}=2.155$ ,  $p>0.05$ , or in the physical self-concept,  $F_{(1,38)}=2.09$ ,  $p>0.05$ .

Likewise, in relation to reading motivation ANOVAs, the results (**Table 3**) clearly indicate that participants with reading disabilities show significantly lower motivation for reading on the full scale,  $F_{(1,38)}=25.42$ ,  $p<0.000$ ,  $\eta^2=0.407$ , with a large effect size. In addition, in the two scales of intrinsic reading motivation, participants with reading disabilities scored significantly lower in *the Reading as part of self-scale*,  $F_{(1,38)}=26.93$ ,  $p<0.000$ ,  $\eta^2=0.42$ , with a large effect size, and in the reading as a successful challenge scale,  $F_{(1,38)}=16.57$ ,  $p<0.000$ ,  $\eta^2=0.309$ , with a large effect size. As for the extrinsic reading motivation, participants with reading disabilities only obtain lower results than the control group in *the Reading to Do Well in Other Realms scale*,  $F_{(1,38)}=9.454$ ,  $p=0.002$ ,  $\eta^2=0.204$  with a moderate effect size, although the significant differences in *the Reading for Acknowledgement scale* were not met,  $F_{(1,38)}=1.81$ ,  $p>0.05$ .

The results of the ANOVAs between groups in relation to causal attributions in successful situations indicate differences between the two groups (**Table 4**). Thus, participants with reading disabilities remarkably *do not attribute their success to their ability* in comparison to the control group,  $F_{(1,38)}=6.80$ ,  $p=0.013$ ,  $\eta^2=0.155$ , with a moderate effect size. In turn, they attribute their success *more to fate* than to their capacities,  $F_{(1,38)}=4.54$ ,  $p=0.04$ ,  $\eta^2=0.109$  with a moderate effect size. They also consider that their reading success is linked to *the help they receive*,  $F_{(1,38)}=18.904$ ,  $p=0.002$ ,  $\eta^2=0.223$  with a moderate effect size. In the only aspect in which no differences between groups were found is in causal attributions of success due to effort,  $F_{(1,38)}=0.335$ ,  $p>0.05$ , since both groups consider that personal effort can help them to succeed in reading tasks.

Regarding attributions of failure, participant with reading disabilities attribute their failure to their lack of capacity in a greater extent,  $F_{(1,38)}=18.90$ ,  $p<0.000$ ,  $\eta^2=0.338$ , with a large effect size. They also attribute their failure to their lack of luck / bad luck,  $F_{(1,38)}=12.54$ ,  $p=0.001$ ,  $\eta^2=0.253$ , with a moderate effect size; and to the lack of help,  $F_{(1,38)}=15.895$ ,  $p=0.000$ ,  $\eta^2=0.301$ , with a large effect size. On the other hand, there are no significant differences between groups in attributions of failure due to lack of effort,  $F_{(1,38)}=1.02$ ,  $p>0.05$ .

**Table 1** Measures, standard deviations and results of the comparison between groups regarding anxiety and depression.

	Dyslexia group	Control group			
	n=19	n=20	$F_{(1,38)}$	p	$\eta^2$
<b>Anxiety as a state/STAI</b>			0.594	0.446	0.016
Mean	16.42	14.30			
Sx	8.51	8.65			
<b>Anxiety as a trait/STAI</b>			0.000	0.999	0.000
Media	19.95	19.95			
Sx	9.24	5.64			
<b>Depression as a state/IDER</b>			0.091	0.764	0.002
Mean	16.00	16.40			
Sx	4.78	3.40			
<b>Depression as a trait/IDER</b>			0.516	0.477	0.014
Mean	16.84	15.70			
Sx	5.73	4.09			

**Table 2** Measures, standard deviations and results of the comparison between groups regarding self-concept.

	Dyslexia group	Control group			
	n=19	n=20	$F_{(1, 38)}$	P	$\eta^2$
<b>Academic-labor self-concept/AF5</b>			24.182	0.000	0.395
Mean	6.11	8.23			
SD	1.76	0.76			
<b>Social self-concept/AF5</b>			0.475	>0.05	0.013
Mean	6.90	7.29			
SD	1.95	1.58			
<b>Emotional self-concept/AF5</b>			0.219	>0.05	0.006
Mean	5.10	5.42			
SD	1.79	2.41			
<b>Family self-concept/AF5</b>			1.045	>0.05	0.027
Mean	8.15	7.72			
SD	1.41	1.18			
<b>Physical self-concept/AF5</b>			2.095	>0.05	0.054
Mean	6.00	6.97			
SD	2.31	1.83			

**Table 3** Measures, standard deviations and results of the comparison between groups regarding reading motivation.

	Dyslexia group	Control group			
	n=20	n=19	$F_{(1, 38)}$	p	$\eta^2$
<b>Reading as part of self</b>			26.931	0.000	0.421
Mean	2.84	3.84			
Sx	0.74	0.41			
<b>Reading as a successful challenge</b>			16.570	0.000	0.309
Mean	3.02	3.70			
Sx	0.61	0.41			
<b>Reading for acknowledgement</b>			1.825	0.185	0.047
Mean	2.89	3.31			
Sx	0.93	1.00			
<b>Reading to do well in other realms</b>			9.454	0.002	0.204
Mean	3.47	4.06			
Sx	0.499	0.678			
<b>Overall reading motivation</b>			25.420	0.000	0.407
Mean	3.02	3.77			
Sx	0.50	0.42			

## Discussion

The aim of this paper is to characterize the emotional and motivational problems adolescents with reading disabilities experience. Our results confirm that adolescents with reading disabilities constitute a group of greater vulnerability to experience more difficulties associated with the emotional and motivational levels.

Many studies have found greater problems of anxiety and depression in children with learning disabilities in reading. Such studies usually deal with the perspective of parents and teachers [54]. However, our results do not indicate that adolescents with reading disabilities have significantly more anxiety or depression

problems in spite of getting higher scores on anxiety as a state and depression as a trait. These results align with the findings of other studies with adolescents and adults with reading disabilities who do not show this type of difficulty either [13-15].

Regarding studies that have analyzed the self-concept of adolescents with reading disabilities, our results clearly show exclusive problems of self-concept in the academic / labor domain, as confirmed by the results of the meta-analysis of Bear et al. [19]. Similar results have been found with children [17,18,24,39], adolescents [13] and adults with reading disabilities [26].

A less studied aspect is the motivational reading in adolescents with reading disabilities. Our results are very clear to show

**Table 4** Measures, standard deviations and results of the comparison between groups regarding causal attributions to success/ failure.

	Dyslexia group	Control group			
	n=19	n=20	F <sub>(1, 38)</sub>	P	η <sup>2</sup>
<b>Causal attributions of success to capacity</b>			6.808	0.013	0.155
Mean	3.42	4.32			
SD	1.29	0.83			
<b>Causal attributions of success to effort</b>			0.335	>0.05	0.009
Mean	4.02	3.87			
SD	0.69	0.91			
<b>Causal attributions of success to luck</b>			4.541	0.04	0.109
Mean	3.57	2.85			
SD	1.19	0.93			
<b>Causal attributions of success due to help</b>			10.602	0.002	0.223
Mean	2.97	2			
Sx	0.90	0.95			
<b>Causal attributions of failure to capacity</b>			18.904	0.000	0.338
Mean	2.81	1.55			
Sx	0.73	1.05			
<b>Causal attributions of failure to effort</b>			1.022	0.319	0.027
Mean	3.44	3.72			
Sx	0.72	0.96			
<b>Causal attributions of failure to luck</b>			12.543	0.001	0.253
Mean	3.57	2.27			
Sx	1.26	1.03			
<b>Causal attributions of failure due to help</b>			15.895	0.000	0.301
Mean	3.18	1.90			
Sx	1.03	0.98			

problems of reading motivation, both extrinsic and intrinsic. Although the work in students with disabilities is scarce, our results coincide both with the problems of reading motivation found in adolescents [42] and in children with reading disabilities [40,41].

A final aspect that confirms our results is the existence of an attributional maladaptive pattern in adolescents with reading disabilities; that is, they attribute their successes to external causes such as luck or help, while they attribute their failures mainly to internal causes such as lack of capacity. These data are consistent with those found in children and adolescents with learning disabilities [28-30,33,34,55], although some studies have found two different attributional profiles, one adaptive and one maladaptive [56].

In conclusion, our research results, as well as those of studies developed especially in the last decades, show that learning disabilities cross the academic barrier, causing emotional and motivational difficulties with great impact in the students with reading disabilities daily life. That is, there is sufficient basis that demonstrates that educational professionals should not underestimate the vulnerability of students with reading disabilities to experience other difficulties associated with emotional and motivational level. Since the goal of psychoeducational interventions is to promote the integral development of students to facilitate their integration into the community and in the world of work, psychoeducational actions should not be limited to the recovery of academic problems, but should be oriented to minimize their emotional and motivational problems.

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