

## Summary

# Perceiving Nonverbal Cues of Affect in Children with Learning Disabilities

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Children with learning disabilities (LD) often have severe social skills deficits along with their academic difficulties (Bauminger, Edelsztein, & Morash, 2005; Bryan, 1977; Reiff & Gerber, 1990). They have difficulties in solving problems using their social skills and producing alternative solutions to problems they encounter in their relationships with their friends (Carlson, 1987; Nabuzako & Smith, 1999). In several studies it is indicated that children with LD choose inappropriate ways to communicate, incorrectly identify the intention of others, cannot interpret the nonverbal cues in the course of communication and therefore cannot choose the appropriate communication behaviors (Nabuzako & Smith, 1999; Nowicki & Duke, 1992).

The difficulties in perceiving nonverbal cues are suggested to underlie the social skills deficits of children with LD (Bauminger et al., 2005; Bryan, 1977; Jackson, Enright, & Murdock, 1987; Reiff & Gerber, 1990; Sprouse, Hall, Webster, & Bolen, 1998; Tur-Kaspa & Bryan, 1994, 1996). Nonverbal cues consists of 90% of the communication and it is conveyed by mimics, gestures, posture, and vocal intonation (Altıntaş, 2005; Goldin & Meadow, 2000). Studies showed that children with LD are slower and less successful in interpreting facial, postural, and intonational cues than their peers with typical development (TD) (Bryan, 1977; Dimitrovsky, Spector, Levy-Shif, & Vakil, 1998; Petti, Voelker, Share, & Hayman-Abello, 2003). However, in order to achieve a successful communication, it is crucial to correctly identify the affect which is being conveyed by the nonverbal cues and to respond with appropriate expression and behaviors (Holder & Kirkpatrick, 1991).

Development of skills in perceiving nonverbal cues is positively related with the intensity of the peer interactions (Hetherington & Parke, 1993; Shaffer, 1996; Walden & Baxter, 1989). However, children with LD have been found less likely to have sufficient and quality

peer interactions, which in turn, results in having less opportunities to develop skills in interpreting the nonverbal cues and negatively affecting their peer interactions during middle childhood (7-12 years) (Bauminger et al., 2005). There are several studies showing that children with LD generally were less successful in identifying emotions such as happiness, sadness, fear, surprise, and anger expressed by nonverbal cues than their TD peers (Bauminger et al., 2005; Holder & Kirkpatrick, 1991; Most & Greenbank, 2000; Sprouse et al., 1998).

Development of skills in perceiving nonverbal cues is also positively related with the age (Agaliotis & Kalyva, 2008; Bloom & Heath, 2009; Dimitrovsky et al., 1998; Holder & Kirkpatrick, 1991; Jackson et al., 1987; Sisterhan & Gerber, 1989). Studies show that these skills develop with age and older children with LD interpret nonverbal cues much better than younger ones (Holder & Kirkpatrick, 1991; Jackson et al., 1987; Sisterhan & Gerber, 1989). However, studies also show that children with LD are more incompetent in these skills in every age than their peers with TD (Dimitrovsky et al., 1998; Jackson et al., 1987).

Nevertheless, there is no study examining social competence and perception of nonverbal cues in children with LD in Turkey. Therefore, the purpose of this study was to compare perception of affect via nonverbal cues in Turkish children with LD and TD. The results from this study are thought to compensate for the lack of knowledge in the field, provide information about the social competence of Turkish children with LD, and shed light on future studies.

## Method

### Participants

Participants included 60 children with LD and 60 children with TD (comparison group) attending third

through fifth grades. Of every grade a total of 20 children (about 10 girls and 10 boys) participated in the study.

### Measures

The Test of Perception of Affect via Nonverbal Cues (TPANC) developed by the researchers was used to assess children's perception of nonverbal cues related to six basic emotions, happiness, sadness, fear, anger, amazement, and disgust. The test had four subtests including mimics, posture/gestures, voice, and social stories. All emotions were expressed by three adult and three child models with prior theatre education. The mimics subtest consisted of 24 photographs while the models were facially expressing six emotions. The posture/gestures subtest consisted of one to three seconds long videos showing expressions of four emotions, happiness, sadness, anger, and fear using body movements. This subtest included eight videos. In the voice subtest, models vocalized the sentence of "Have you tasted the meal?" with different vocal intonations and stress expressing six emotions. This subtest included 12 vocal questions. Lastly, the social stories subtest included a total of 12 social situations related to all six emotions. Each story was expressed by one/two sentences.

Each correct answer was scored as one point and no points were given for incorrect answers. When children were observed as not understanding the question properly, the question was introduced a second time.

### Procedure

Following the completion of the test development process, clarity of the questions was assessed through a pilot study in which the test was administered to 21 children attending third, fourth, and fifth grades. Results of the pilot study showed that the Cronbach's Alpha reliability coefficient of the test was .79. The test was administered to children individually in a quiet setting using a computer. Each administration lasted about 20 minutes. The procedural reliability percentage was 100%.

### Results

Data were analyzed using One-Way-Analysis of Variance test (ANOVA). Results showed that children with LD had lower scores than children with TD on mimics ( $F_{1,118} = 16.64, p < .001, \eta^2 = .12$ ), posture/gestures ( $F_{1,118} = 24.64, p < .001, \eta^2 = .17$ ), voice ( $F_{1,118} = 28.55, p < .001, \eta^2 = .19$ ), and social stories subtests ( $F_{1,118} = 23.87, p < .001, \eta^2 = .16$ ).

Scores of children with LD and TD on TPANC were also compared across grades. Results showed that, for the third graders the significant differences were on mimics ( $F_{1,38} = 17.70, p < .001, \eta^2 = .31$ ), posture/

gestures ( $F_{1,38} = 27.28, p < .001, \eta^2 = .41$ ), voice ( $F_{1,38} = 38.13, p < .001, \eta^2 = .50$ ), and social stories subtests ( $F_{1,38} = 16.39, p < .001, \eta^2 = .30$ ). In all subtests children with LD scored lower than children with TD. For the fourth graders, group differences were not significant for the mimics subtest but children with LD showed significantly lower performance than their peers on posture/gestures ( $F_{1,38} = 10.37, p < .01, \eta^2 = .21$ ), voice ( $F_{1,38} = 9.61, p < .01, \eta^2 = .20$ ), and social stories subtests ( $F_{1,38} = 11.84, p < .001, \eta^2 = .23$ ). For the fifth graders, there were no significant differences between groups in any of the subtests.

In terms of gender, girls with LD had significantly lower scores than girls with TD on mimics ( $F_{1,55} = 9.40, p < .01, \eta^2 = .14$ ), posture/gestures ( $F_{1,55} = 27.75, p < .001, \eta^2 = .33$ ), voice ( $F_{1,55} = 27.74, p < .001, \eta^2 = .33$ ), and social stories subtests ( $F_{1,55} = 14.98, p < .001, \eta^2 = .21$ ). Similarly, boys with LD scored significantly lower on mimics ( $F_{1,61} = 7.31, p < .01, \eta^2 = .10$ ), posture/gestures ( $F_{1,61} = 5.52, p < .05, \eta^2 = .08$ ), voice ( $F_{1,61} = 6.80, p < .05, \eta^2 = .10$ ), and social stories subtests ( $F_{1,61} = 8.86, p < .01, \eta^2 = .12$ ) than boys with TD.

### Discussion

The purpose of this study was to investigate the perception of affect via nonverbal cues in children with learning disabilities comparing to their peers with typical development. Results showed that children with LD performed significantly lower than children with TD on all subtests. The findings of the study are consistent with the results of previous studies Bryan 1977; Dimitrovsky et al., 1998; Jackson et al., 1987; Most & Greenbank, 2000; Nabuzako & Smith, 1999; Petti et al., 2003).

Children with learning disabilities significantly differed than their typically developing peers in all subtests of the TPANC in third grade and in posture/gestures, voice, and social stories subtests in fourth grade. However, when they reached the fifth grade the significant differences disappeared. Findings of previous studies support the results of this study. Even though (Dimitrovsky et al., 1998; Jackson et al., 1987) some studies found that the difference between the groups continued in older ages, many studies showed that children with learning disabilities reach a level on perceiving nonverbal cues of affect comparable to their typically developing peers as they get older (Bloom & Heath, 2009; Holder & Kirkpatrick, 1991; Sisterhan & Gerber, 1989). Results of this study showed that children with typical development substantially developed their skills prior to third grade while children with learning disabilities were only able to reach the same level in fifth grade. This result must be carefully considered since students with learning dis-

abilities may have encountered several failures as a result of their lower skills in perceiving nonverbal cues of affect, which in turn, may negatively affect their social development.

In this study, girls and boys with learning disabilities performed significantly lower in all subtests than their same gender peers with typical development. However, the effects sizes found for the group differences in the comparisons of girls are considerably bigger than of boys. This result is also comparable to the findings of previous studies and it is generally thought to be related to the biological differences and traditional gender roles. Based on biological and socialization differences, to show more extroverted and aggressive behaviors while girls show more introverted and passive behaviors, therefore, learning difficulties of girls may not receive adequate attention and less likely to be identified as learning disabilities (Bender, 2008; Lerner, 2001). For similar reasons, teachers are less likely refer girls for an evaluation for special education (Anderson, 1997; Asan-Tezer, 2006). Therefore, girls who have a diagnosis are generally supposed to have more serious learning difficulties (Bender, 2008; Lerner, 2001; Pierangelo & Giuliani, 2006). On this basis, the girls in this study are assumed to have greater learning problems and this may

partly account for their lower scores on perceiving nonverbal cues of affect than boys.

This study is thought to contribute to the future studies and programs in the field by providing knowledge about children's perception skills of nonverbal cues of affect. However, there are some important limitations of the study that must be considered when interpreting the results. First, rather than grade level and gender we did not consider other factors such as parental educational level and features of their home and classroom environments that might influence their skill development. Therefore, it is suggested to examine or control the effects of these factors in future studies. Second, whether the impairments in perception skills of nonverbal cues of affect yield to any important problems or what types of problems they might cause were not examined. Thus, in future studies, it is strongly suggested to examine sociometric status of children with learning disabilities, their communication and play skills, and help-seeking behaviors in relation to their skills in perceiving nonverbal cues of affect. Third, only a limited age group of children was included in this study. It is suggested to conduct similar studies with different age groups to examine the developmental process of perceiving nonverbal cues of affect.