

Predictors of emotional awareness during childhood

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ABSTRACT

Emotional awareness, the ability to identify and describe one's own emotions, and those of other people, has been widely studied in adult samples, while only few studies have been conducted during childhood. Aim of the present study was to investigate the predictability of the main variables usually associated with the study of emotional awareness. The LEAS-C was administered to a group of 781 children aged 8 to 13 years old. The results showed that both gender and verbal skills are important predictors of children's emotional awareness. Moreover, cognitive ability and emotion recognition also predicted LEAS-C scores. Finally, age emerged as a significant predictor of the complexity of children's emotional awareness. The assessment of children's emotional awareness may be significant for different health-related purposes, e.g. prevention and psychological support.

Keywords: Levels of Emotional Awareness Scale for Children; Gender; Age; Verbal Skills; Cognitive Ability; Emotion Recognition

1. INTRODUCTION

In recent years, there has been a growing interest in emotional awareness, defined by Lane and Schwartz [1] as the ability to identify and describe one's own emotional experiences and those of others. A large variety of models have been suggested to explain emotional awareness. One of the most widely known is the level of emotional awareness (LEA) model proposed by Lane [1], that focuses on the structure and complexity of the representations of emotions. This model defines emotional awareness as a cognitive skill that changes along a developmental sequence that is similar to the one described by the theories of Piaget and Werner [2].

A commonly used measure of emotional awareness is the Levels of Emotional Awareness Scale (LEAS) [3] that was developed to measure individual differences in

the complexity of emotional awareness, among adults. The LEAS includes twenty real-life scenarios, and respondents are asked to imagine and to describe how they and other characters in those scenarios would feel. On the basis of the respondents' descriptions, LEAS provides three emotional awareness scores: "self", "other", and a total score. Descriptions are coded according to the degree of complexity of the emotional representations. Levels of complexity range from simple cognition (representations without emotional content), to responses focused on tangible emotion aspects (e.g., actions) and representations of unidimensional emotions, to representations with emotion blends evident and in which emotional experiences of self and other are differentiated [3].

Individual differences in emotional awareness have been identified using the LEAS. Consistent gender differences emerged, with females characterized by higher levels of emotional awareness than males [4]. Emotional awareness has been found to correlate with other areas of emotional functioning, such as the ability to recognize and categorize emotional stimuli [5]. Moreover, research found a significant relationship between verbal ability and LEAS scores: the LEAS correlates positively with the Wechsler Adult Intelligence Scale vocabulary subtest [6] and with the Shipley Institute of Living Scale [7].

Lane and Schwartz [1] suggested applications of this model to unresolved problems in health area, research and practice. Indeed, some studies have shown that low levels of emotional awareness are related to several clinical conditions, such as depression [8], eating disorders [9,10] and substance-addiction [11].

Despite the importance of emotional awareness through the life span, few studies have investigated the development of emotional awareness in children. The assessment of children's emotional awareness and of its development may be crucial for a better understanding of the role of these competences in children's adaptation to their environment. Emotional awareness among children may be particularly important for their interpersonal functioning, as children who are more competent at these skills tend to have better social and environmental adjustment [12-14], an incremental quality of social relationships, and fewer emotional and behavioral problems

[15,16].

The lack of studies on emotional awareness in children was mainly due to the lack of instruments specifically designed for childhood and preadolescence. To improve this situation, Bajgar and co-workers [17] created a modified child version of the Level of Emotional Awareness Scale (LEAS-C) which includes twelve scenarios. Although LEAS and LEAS-C differ in the number and content of scenarios, the design and scoring procedure are similar. Results of previous validation studies suggest that the reliability of the LEAS-C is acceptable and the inter-rater reliability is high [17,18]. Similar findings regarding reliability and validity were reported in a preliminary study on the Italian validation of the LEAS-C [19].

The gender effects found in adults have also generally emerged in children and preadolescents, with female participants outperforming males [17,18]. Despite emotional awareness being defined as a cognitive skill that changes along a developmental sequence, age effects have not been evidenced in prior researches [17-19]. However, previous studies compared findings on children with findings of previous studies on adult samples using the LEAS [17-19] or only examined emotional awareness in samples of preadolescents and adolescents [18]. Emotional awareness in children seems to be weakly related to emotional knowledge; in particular, LEAS-C “self” scores were not related to emotional abilities, while LEAS-C “other” scores were positively but weakly related to emotion comprehension and to emotional expression [17]. Findings on preadolescents and adolescents showed positive but weak correlations between LEAS-C “self”, “other”, and total scores and different measures of emotional intelligence (perceiving emotions, facilitating thoughts, understanding emotions, managing emotion) using the MSCEIT-YV [18]. As regards to the relationships between emotional awareness and verbal abilities, LEAS-C total scores have been shown to be positively related to the verbal subtest of the WISC-III and to verbal productivity in children [17]. Veirman and co-workers [18] found that LEAS-C scores were related to verbal IQ as well as to SPM abstract reasoning in preadolescents and adolescents.

Because of the lack of studies and because of the importance of studying emotional awareness during development, the present research was conducted to investigate emotional awareness among a large group of Italian school children and preadolescents. The main aim of the present research was to explore, using the Italian version of the LEAS-C [20], whether the variables usually associated to the study of emotional awareness can be considered significant predictors of emotional awareness during childhood. Since previous studies showed weak or incongruent findings in terms of relationships between

emotional awareness, cognitive and verbal skills, and emotional abilities, we focused on the predictability of those variables on LEAS-C scores. First, on the basis of past data, we hypothesized that gender and verbal skills could be considered important predictors of children’s emotional awareness. Moreover, according to the developmental nature of Lane’s theory, both age and cognitive abilities were hypothesized to partly explain the level of the children’s emotional awareness. Finally, since previous studies found an association between emotional perception and emotional awareness, we investigated whether the recognition of emotions on others’ faces could also be considered an important predictor of emotional awareness.

2. METHOD

2.1. Participants

Seven hundred and eighty one students (382 males) ranging in age from 8 to 13 years participated in the study. All participants were recruited from primary (3th - 4th - 5th grade) and middle (6th and 7th grade) State Schools. Pupils with special educational needs and those who had Italian as an additional language were excluded from the sample. As shown in **Table 1**, complete data were collected from 603 pupils (285 males) ranging in age from 8 to 13 years (Mean age = 10.26 years; SD = 1.58 years).

2.2. Measures

2.2.1. Levels of Emotional Awareness Scale-Children

The LEAS-C [17] is comprised of 12 scenarios, each involving two people: the respondent and another person. Following each scenario, the respondents are asked two questions: “How would you feel?” “How would the other person feel?” Children are required to generate their own answers to these questions.

The scenarios are based on everyday social situations and they mainly represent school-based situations and home oriented situations. Scoring procedures for the LEAS-C are the same as those used for the adult-based LEAS. The complexity of emotional awareness is assessed on a 5-point scale ranging from 0 to 4. A level 1 low awareness response may stress somatic features, or may directly state a lack of emotional response. A level 2 response may reflect action, or a more global generalized

Table 1. Participants divided by age and gender.

8		9		10		11		12		13	
M	F	M	F	M	F	M	F	M	F	M	F
48	53	59	61	59	57	52	56	39	64	28	27
101		120		116		108		103		55	

response. Level 3 responses reflect one-dimensional emotions. Level 4 responses reflect greater complexity in awareness, with emotion blends evident. A 0 score is given when there is no response or the response reflects cognition. Three scores are allocated for each scenario: Self Awareness, Other Awareness and Total Awareness. Total scores depend on the degree of differentiation between the “self” and “other” emotional states. The total score equals the highest score obtained for “self” or “other”, when no differentiation is made, while it equals 5 when differentiation is clearly apparent. A glossary of words accompanies the scoring manual to aid in the scoring of emotion words. In particular, in the present study we used the LEAS-C Italian version recently developed by Marchetti and co-workers [19].

2.2.2. Emotional Facial Expression Recognition

Forty-eight colour pictures of faces representing five basic emotions (anger, fear, sadness, happiness, and disgust) and neutral expressions were selected from the Karolinska Directed Emotional Face System (KDEF) [21]. Eight faces, balanced for gender, were selected for each emotional expression. The 48 pictures were divided into two sets of 24 facial expressions, and each set was arranged in four blocks of six expressions, such that there was one exemplar from each of the six stimulus types in each block. For each set, four different orders of picture presentation were constructed. Stimulus presentation was conducted with an Acer laptop computer with a 2.4 GHz processor and a 21-inch monitor. A refresh rate of 60 Hz and a resolution of 1440 × 900 pixels were used. For each participant, a global emotion recognition ability score was computed on the basis of the accuracy in the recognition of the six facial expressions.

2.2.3. Raven’s Progressive Matrices

Raven’s Progressive Matrices [22] are a measure of pure non-verbal reasoning ability that is thought to be relatively independent of specific learning acquired in a particular cultural or educational context. In this study, we administered the Coloured Progressive Matrices (CPM), a simpler version of the test often used with children. It consists of 36 items presented in three sets of 12 each. Researches on many different samples and settings have consistently revealed good psychometric properties for the Raven matrices [23]. CPM scores were transformed in percentile scores according to Italian age norms [24].

2.2.4. Verbal Skills

Replicating Bajgar and co-workers’ [17] validation study of the LEAS-C, the total number of words used to respond to all LEAS-C scenarios were summed to provide a Verbal Productivity score for each participant. Moreover, end-of-year grades in language were used as a

measure of vocabulary skill. Grades were obtained for each pupil from school offices and ranged from 5 to 10, with a mean of 7.72 (SD = 1.16).

2.3. Procedure

The purpose of the study was presented to the headmasters and teachers in each school. Informed consent was obtained from parents and all the participants were asked for their personal assent. The LEAS-C and SPM measures were administered in a group setting during regular class time. Tasks were briefly presented in each one of the classrooms and after brief group instructions on the answer formats, all participants filled out the tests individually in their classrooms. Administration lasted for about 20 - 30 minutes for the LEAS-C, and about 15 minutes for the Standard Progressive Matrices. Subsequently, all participants were given the emotional recognition task. Pupils were tested individually in a quiet room arranged for the experimental procedure. Participants sat approximately one meter from the computer screen on which the pictures were presented. Each face was presented on the screen for a 6-second interval, and after each picture offset, participants were asked to complete a facial expression recognition task. In particular, participants were asked to select one of six emotion labels (anger, sadness, happiness, fear, disgust, and neutral) that best described the emotional expression they had just seen. Participants were given 10 seconds to make their selection, and they were asked to respond as accurately as possible. The task length was about 20 min.

3. STATISTICAL ANALYSIS

Statistical analysis were conducted using SPSS 18.0. First, correlations between all variables (emotional recognition, cognitive ability and verbal skills) and the emotional awareness scales were performed for the total sample and for male and female participants separately. Then, we conducted three hierarchical regressions in order to assess which variables were significant predictors of “self”, “other” and total emotional awareness. The first and the second block included gender and age, and children’s verbal skills (as measured by verbal productivity and language grades), respectively, as previous research indicated these as the principal variables in the study of emotional awareness, whereas two further blocks included cognitive ability and emotional recognition, respectively.

4. RESULTS

Means and standard deviations and correlations between the study variables are presented in **Table 2**.

Positive correlations emerged between all variables (emotional recognition, cognitive ability and verbal skills) and the emotional awareness scales.

Correlation performed separately for males and females did not reveal gender differences in the associations between variables.

Predictors of Emotional Awareness

The results of hierarchical regressions showed that the predictors of “Self” Emotional Awareness are gender, with girls showing higher emotional awareness than boys, Verbal Productivity and Language Grades, cognitive ability and emotional facial recognition (Table 3).

The children’s age instead showed no effect in predicting self-emotional awareness. Even though a smaller portion of variance was predicted by the model in the “Other” Emotional Awareness Scores, the same predictors as those found for “Self” Awareness emerged in these scores. Again, age was not a significant predictor. Finally, the regression performed on Total Emotional Awareness showed that the predictors explained a larger portion of variance than in the “Self” and “Other” scores (Table 2). Moreover, age emerged as a significant variable in predicting Total Emotional Awareness, with awareness increasing through the months.

5. DISCUSSION

The aim of the present study was to investigate the main predictors of children’s emotional awareness among the variables that are usually associated to the study of emotional awareness as measured by the LEAS-C. In particular, we studied the predictability of gender, age, verbal skills, cognitive ability and emotion recognition on emotional awareness.

Table 2. Descriptive statistics and correlations among the study variables.

	1	2	3	4	5	6	7
1. “Self” Emotional Awareness	-						
2. “Other” Emotional Awareness	0.70**	-					
3. Total Emotional Awareness	0.78**	0.71**	-				
4. Verbal Productivity	0.18**	0.15**	0.24**	-			
5. Language Grades	0.18**	0.12**	0.13**	0.10*	-		
6. Cognitive ability	0.16**	0.15**	0.12*	-0.05	0.39**	-	
7. Emotion recognition	0.14**	0.14*	0.18**	0.14**	0.06	0.09	-
Mean	30.98	29.57	33.93	135.23	7.72	52.16	89.13
SD	5.00	5.89	5.21	56.99	1.16	29.53	11.31

Note: *p < 0.01, **p < 0.001.

Table 3. Hierarchical regression predicting Emotional Awareness Scores (“Self”, “Other” and Total score) from gender, age, verbal skills (verbal productivity and language grades), cognitive ability and emotion recognition.

Predictor	“Self” Awareness		“Other” Awareness		Total Awareness	
	ΔR ²	β	ΔR ²	β	ΔR ²	β
<i>Step 1</i>	0.01*		0.02**		0.04***	
Gender		-0.11**		-0.13**		-0.16***
Age		.00		0.01		0.09*
<i>Step 2</i>	0.05***		0.02**		0.07***	
Verbal Productivity		0.15***		0.11**		0.16***
Language Grades		0.17***		0.11*		0.22***
<i>Step 3</i>	0.01*		0.01*		0.01**	
Cognitive Ability		0.11*		0.11*		0.13**
<i>Step 4</i>	0.01*		0.01*		0.01**	
Emotional Face Recognition		0.11*		0.10*		0.13**
N	603		603		603	
Total R ²	0.08		0.06		0.13	

Note: *p < 0.05, **p < 0.01, ***p < 0.001; gender coded: 0 = female, 1 = male; age is expressed in months, and ranged from a minimum of 96 to a maximum of 167 months (M = 132.57; DS = 21.03).

Among the variables studied in the present work, results showed that gender and verbal skills are the main predictors of children’s emotional awareness. In particular, these results showed that girls have a higher awareness of emotions (both of self and others) than boys. These findings are consistent with previous data showing a female advantage in emotional awareness [17,18]. Women, for example, have higher availability of emotion knowledge, higher accessibility of emotion knowledge, and higher motivation to use emotion knowledge than men [4]. As suggested by past literature, the present study demonstrated the importance of gender in explaining emotional awareness during childhood as well.

Moreover, verbal skills (measured by both verbal productivity and scholastic language grades) significantly predicted children’s “self” and “others” emotional awareness as measured by LEAS-C. This result is consistent with past data evidencing a strong association between language competence and emotional competence during childhood [25,26]. Previous research showed that the strongest contributors to this association were the language vocabulary and literacy and the knowledge and awareness of mixed emotions [27]. In line with Beck and co-workers [27] results, we found that the complexity in emotional awareness was in part predicted by the complexity of language skills. However, this result could also be imputed to the nature of the instrument used to measure emotional awareness in the present study. The LEAS-C requires children to produce verbal writing responses.

Previously, other works [17,18] have found a positive association between verbal competence and this scale. However, in agreement with Veirman and colleagues [18], we found that children's emotional awareness was not exclusively related to emotional competence but also to non-verbal abilities.

Our results showed that cognitive ability and emotional facial recognition were also important variables in predicting awareness of self and others' emotional states. Even if previous studies have sustained a relationship between these variables and emotional awareness, only weak associations between them and LEAS-C scores have been evidenced [17,18]. Notwithstanding the weak correlations that also emerged in the present study, which could evidence a divergence between the measured constructs, our results showed that both cognitive ability and emotion recognition could significantly predict children's awareness of self and others' emotional states. In regards to cognitive ability, our results confirmed Lane's hypothesis that the complexity of emotional understanding would increase with cognitive abilities [17]. In particular, on the basis of our results, we could hypothesize that the progressions in emotional competence and comprehension is in part regulated by the children's cognitive development. Moreover, we found that the ability of recognizing emotions on others' faces also emerged as an important variable in predicting children's awareness of self and others' emotions. However, this result is not surprising, considering that the ability to encode and decode facial expressions is one of the most important means through which children acquire emotional and social competence [28,29].

Final and separate considerations are dedicated to the results emerged in the LEAS-C total score. These results showed that the variables used in the regression model explained an important percentage of variance of total emotional awareness. All the variables had a stronger impact on total score than on "self" and "other" scores. Total emotional awareness is not the simple sum of "self" and "other" scores, but it is the result of both the child's complexity and differentiation of self and others' emotional experience. It provides a summarizing measure of the children's emotional awareness complexity. Our results showed that all the variables included in the regression model explained large portions of variance of emotional awareness complexity. Moreover, children's age only emerged as a significant predictor in the emotional awareness total score. For the first time in literature, these results confirm the developmental basis of the LEA model proposed by Lane [1]. These results, in fact, showed that age is a significant predictor of emotional awareness complexity, in agreement with the LEA model that suggested that "children's representations evolve from an initial focus on the here and now to an internal

mental world that is shared with other people" [18].

The results of the present study could provide important data for the study of emotional awareness during childhood, in particular for researchers interested in studying this construct using the LEAS-C. However, this work represents only a first exploration of this phenomenon in childhood and further studies are needed to explore the importance of other variables in explaining the complexity of emotional awareness. From a health-related perspective, it may result particularly important exploring whether an impairment in one or more predictors of emotional awareness emerged in the present study (e.g., verbal or cognitive ability) could also impair the children's emotional awareness. Emotional awareness is indeed a central ability for children's adaptation to their social environment. From a prevention and from a clinical perspective, screening children for emotional deficits related to emotional awareness could for example assist teachers and school psychologists in recognizing individuals who are vulnerable to psychological and physical disorders, and to provide an early emotional support.

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