THE CHILD AND ADOLESCENT SOCIAL PERCEPTION MEASURE

Joyce Magill-Evans, Cyndie Koning, Anne Cameron-Sadava, and Kathy Manyk

ABSTRACT: Tests currently available for measuring children's sensitivity to nonverbal aspects of communication have been criticized on methodological and conceptual grounds. The Child and Adolescent Social Perception Measure (CASP) was developed to meet the need for a clinically useful measure which examines social perception within a semi-naturalistic context. The CASP consists of 10 videotaped scenes, each of which lasts 19–40 seconds. The verbal content was removed through electronic filtering so that the ability to receive and interpret nonverbal social cues could be measured without bias from verbal cues. Children are shown the scenes and then questioned about the emotions portrayed. Based on standardization with 212 children and adolescents ages 6 to 15 years old, reliability (interrater, test-retest, internal consistency) and initial validity information are reported.

Social perception or social sensitivity is a complex process which involves both sensory mechanisms (to attend to and register social cues through vision, hearing, touch) and mechanisms to accurately interpret or make sense of the verbal and nonverbal cues provided by social partners (Morrison & Bellack, 1981). Trimboli and Walker (1993) state that it is very difficult to accurately interpret verbal messages without attending to the accompanying nonverbal cues. The social perception skills of children and adolescents affect their ability to interact effectively. Several researchers have clearly demonstrated the relationship between social perception skills and social competence (e.g., Blanck, Buck, & Rosenthal, 1986; Custrini &

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Feldman, 1989; Feldman, White, & Lobato, 1982). For example, children with high sociometric status had higher emotion recognition scores for facial expressions than children who were less popular (Edwards, Manstead, & MacDonald, 1984).

Researchers have examined the social perception skills of children with psychopathology and impairments in their peer interactions in comparison to children without social skill deficits (Russell, Stokes, Jones, Czogalik, & Rohleder, 1993; Shapiro, Hughes, August, & Bloomquist, 1993; Zabel, 1979). These studies have provided evidence that children with psychopathology have deficits in social perception. Children with nonverbal learning disabilities (Rourke, 1988; Semrud-Clikeman & Hynd, 1990), right-hemisphere deficit syndrome (Voeller, 1986), learning disabilities (Wiig & Harris, 1974), and Asperger's Syndrome (Wing, 1981) are also reported to have difficulty judging the affective state of others. It would appear that difficulties in social perception may impair the child's ability to interact effectively with peers. Few of these researchers, with the exception of Voeller (1986), have reported using any standardized measurement of social perception and appear to rely on clinical judgment. Thus, there is a need for a measure of social perception which can be used with these types of children and adolescents in a clinical setting.

The Development of Social Perception

Studies of the development of social perception have found positive correlations between both cognitive ability and age and the ability to recognize photographed facial expressions of emotion. McAlpine, Singh, and Kendall (1991) reported that 12- and 13-year-old children were significantly better at recognizing facial expressions than 5- and 6-year-olds and 8- and 9-year-olds. Philippot and Feldman (1990) found that recognition of happiness, sadness, and fear increased from ages 3 to 5 with happiness recognized by all 5-year-olds, but sadness was recognized by only 54-66% of 5-year-old children. A significant increase in children's abilities to recognize nonverbal cues from grades 1 to 5 was reported by Nowicki and Duke (1994). Rosenthal and associates (Rosenthal, Hall, DiMatteo, Rogers, & Archer, 1979) also found a significant linear trend in the scores of children from grades 3 to 6 on the Profile of Nonverbal Sensitivity (PONS). Others (Feldman et al., 1982; Morency & Krauss, 1982; Wiggers & Van Lieshout, 1985) have supported the increasing ability to accurately identify the emotional state of others with age. This increased ability is not due solely to increased expressive vocabulary as some studies asked the chil-

dren to choose from lists of emotions rather than generating their own label in a free-response format.

Providing a label (e.g., happy, angry) for an expression of emotion is more difficult than choosing the appropriate label from those provided (e.g., choosing the happy face, choosing between the words happy, angry). This skill also improves with age. One of the earliest researchers in this area (Gates, 1923) asked children ages 3 to 14 what the person in the photograph was doing and how the person felt. The children's answers were compared to adults' interpretations. Gates noted an increasingly correct labeling of emotions with age and changes in the types of emotions recognized at different ages. More recently, Harrigan (1984) found an increase in the ability to label six emotions with age. Accuracy was 48% for 3-year-olds, 62% for 6-year-olds, 73% for 9-year-olds, and 82% for 12-year-olds.

Gestures, body movements, and physical proximity also express emotions nonverbally. Boyatzis and Satyaprasad (1994) found that 4- and 5-year-olds were 60% accurate (adjusted for chance) in matching six gestures with the appropriate vignette. Rosenthal and associates (1979) found that children in grades 3 to 6 were increasingly accurate on the PONS in interpreting gestures, postures, and voice cues, a finding supported by the work of Nowicki and Duke (1994) with children from grades 1 to 5. Little other research has been done to examine the developmental progression in understanding these cues (Boyatzis & Satyaprasad, 1994).

As children mature, they are better able to receive and make sense of contradictory messages. Typically-developing preschool children are aware of affective and situational information and can acknowledge different messages from two sources such as verbal tone and facial expression. Children's ability to explain why conflicting messages occur together changes with age. Lightfoot and Bullock (1990) found that preschoolers provided an explanation for only one of the messages. Second and fourth graders had mixed response types although half integrated the two messages by applying one explanation to both messages. Older children and adults integrated the two messages into a single interpretation. Wells and Higgins (1989) found that preschoolers used descriptions of the situation and statements about the feelings of the person to explain incongruent affective and situational cues, while 8-year-olds were more likely to use explanations which inferred previous events or possible future states. Gnepp (1983) found that while preschoolers can receive both cues, they prefer to make inferences based on facial expression. Sixth graders used both facial and situational cues to make inferences and were likely to reconstruct the meaning of facial expressions to fit the verbal message.

There may be differential rates of development of social perception associated with gender. Gates (1923) found small though inconsistent differences. Hall (1978, 1984), in a review of studies of adults and at least 12 studies of children, concluded that females were better at decoding nonverbal cues and that an age and gender interaction effect was absent indicating that the "female advantage at judging nonverbal cues is stable" (1978, p. 854). Rosenthal and associates (1979) reported that girls in grades 3 through high school did better than boys on the PONS. Some recent studies (e.g., Nowicki & Duke, 1994) have not reported differences by gender or minimal differences (Beck & Feldman, 1989; Holder & Kirkpatrick, 1991). Boyatzis and Satyaprasad (1994) did not find gender differences on emotion decoding in preschool children. Because of the possibility of gender differences, care was taken to include equal numbers of males and females in the development of the Child and Adolescent Social Perception measure (CASP) presented in this article.

In summary, social perception is related to social competence and is an important area to assess in children with disabilities. Normally, social perception abilities improve with age (Rosenthal et al., 1979). Therefore, any new measure of social perception should be sensitive to change with increasing age. This aspect of the CASP was examined and is discussed in the Results section.

Measures of Social Perception

Recent literature has examined the usefulness and validity of measures of sensitivity to nonverbal cues. Following a careful review, Trimboli and Walker (1993) concluded that existing measures for adults and children were inadequate for conceptual and methodological reasons. Earlier researchers such as Hall (1984) had also raised concerns about the possibility that the methods being employed might be inappropriate for use in examining ongoing interactions. New measures and methods were needed that avoid the following problems. Most measures of social perception have limited applicability to children (Costanzo & Archer, 1989; Trimboli & Walker, 1993) and are appropriate for a limited range of ages (McAlpine et al., 1991). The methodology used in much of the research to measure social perception has focused primarily on children's ability to accurately identify emotional states from cues such as facial expressions. Many measures assess one source of information such as the child's ability to label facial expressions (Bullock & Russell, 1984), to identify contextual cues (Reichenbach & Masters, 1983), or to assign labels to tone of voice (Boyatzis & Satyaprasad, 1994). Three groups of researchers (Nowicki & Duke, 1994; Rosenthal et al., 1979; Shapiro et al., 1993) have developed mea-

sures of social perception which assess several components of social perception separately. Although contextual information is believed to play a significant role in how nonverbal cues are interpreted (Walker & Trimboli, 1989), little research has included this aspect of social perception or addressed social perception as the synthesis of information from different channels.

Only one measure, the Interpersonal Perception Task (Costanzo & Archer, 1989), was located which provided information from verbal and nonverbal cues in real-life situations. This measure has only been used with adults and, in our view, it was not appropriate for children (e.g., one question is "Who is the higher status person?"; a response category used twice is "they are lovers who havė been together for. . . . "). Given the lack of measures which attempt to assess children's abilities to interpret social cues from several nonverbal sources simultaneously, it was felt that another measure was needed.

Method

Development of the CASP

The CASP was developed to provide a standardized assessment of the child's ability to interpret social cues from many sources simultaneously. The measure is based on a model of social interaction proposed by Doble and Magill-Evans (1992). Social perception as measured with the CASP is operationally defined as the ability to attend to and infer emotional states from nonverbal cues such as facial expression, gestures, tone of voice, and context.

The CASP is designed for use in a clinical setting with children and adolescents with mental health problems. To avoid some of the concerns about earlier measures, the criteria used to guide the development process specified that the CASP should:

1. Reflect the complexity of interactions by assessing the ability to infer emotions from facial expression, tone of voice, gestures, postures, and situational cues occurring simultaneously. Other measures (e.g., Nowicki & Duke, 1994; Rosenthal et al., 1979; Shapiro et al., 1993) present each component separately or in limited combinations.
2. Require children to generate responses rather than choosing from a list of possible answers (e.g., McAlpine et al., 1991, Nowicki & Duke, 1994) as this more closely resembles what happens in interactions and allows the scorer to determine where the source of errors may lie.

3. Measure the number and type of cues that children recall using to infer emotions in order to determine if certain cues are routinely ignored or misinterpreted.
4. Portray types of situations children and adolescents commonly encounter.
5. Be suitable for use with children ages 6-15 years without basement and ceiling effects. Other measures (e.g., Nowicki & Duke, 1994; Shapiro et al., 1993) are limited to children ages 6 to 11 years.
6. Be easy to administer, requiring no more than 30 to 45 minutes, making it practical to use.
7. Have standardized scoring and provide reliability and validity information in the manual.
8. Be sensitive to change due to intervention or development.

Clinical experts in child and adolescent psychiatry (including the test authors) developed a pool of 77 scenes based upon experience and the existing literature. The scenes were then evaluated by independent clinical experts in child and adolescent psychiatry who had not helped generate the scenes. These three people rated the scenes on characteristics such as how often children would be exposed to the type of situation described and the importance of being able to understand the nonverbal communication in such a situation.

Based on these reviews, the 30 most frequently encountered situations which relied on nonverbal cues for accurate interpretation were chosen for filming. A producer was told what they were intended to portray. Children and adolescents were selected by audition from lists supplied by a local television company, a local theatre company, and from school drama classes. Fourteen actors (9 females, 5 males; 12 Caucasian, 1 Asian, 1 Aboriginal) participated (2 of the Caucasians were adults). Because the focus was on nonverbal communication, there were no scripts used for filming. The actors and actresses provided their own dialogue making the situations as natural as possible.

Trials were conducted to determine which method to use in removing the verbal content while maintaining the tonal qualities (see Rosenthal et al., 1979). Five adults with normal hearing listened to passages filtered at different frequency levels to determine how much verbal content could be understood. The best result was obtained by filtering the content using the Butterworth Series 900 at 300 Hz for males and 350 Hz for females and one young boy.

Five scenes were filmed and tested with nine children to ensure that the methodology elicited the kinds of responses anticipated. The remaining scenes were then filmed. A pilot study using the 30-scene version was

done with eight children, resulting in six scenes being deleted for reasons such as poor portrayal of the scene and technical difficulties in recording. The remaining scenes were divided by the test developers into two 12-scene versions which were roughly equivalent on dimensions such as types of emotions portrayed, number of actors/scene, estimated difficulty in understanding the situation using only nonverbal cues, and type of situation. Each version was tested with 15 children. Based upon a review of the psychometric properties of the 24 different scenes (e.g., correlation with age; correlation with total score; interscene correlations; interrater agreement), ten scenes were used to create the current version of the CASP. The children's responses from the pilot study were used to provide exemplars of responses for the answer key.

Description of the CASP

The CASP consists of 10 videotaped scenes which are described in Appendix A. Each scene lasts 19-40 seconds (M = 29). There are two to four characters per scene. Most scenes were filmed from one camera angle (two scenes have two camera angles) and all were without close-ups so that attention is not artificially directed to any one person. The scenes occur in a range of settings (e.g., home, school) with a range of emotions (positive/negative/neutral) and a range of emotional intensities. One scene (Scene 2) has definite incongruent situational and affective cues (a child opening a gift and being unhappy). This scene was included to determine which cues the child attended to (situation or facial expressions and gestures) and to explore the strategies used to resolve the incongruence (e.g., ignoring one cue; reconstructing the meaning of one cue). Because resolving incongruent cues is difficult for younger children (e.g., Lightfoot & Bullock, 1990), inclusion of more than one such scene might have made the CASP too difficult for younger children.

The test is administered individually using a videorecorder and television and requires approximately 40 minutes (range: 20-85) to administer due to the need to write down the responses. After each scene is shown, questions in a standardized protocol (see Appendix B) are used to ask the child to describe what happened in the scene, what each of the people is feeling (e.g., sad), and how he or she could tell the person is feeling that way (e.g., frowning).

An answer key was developed based on the actors' descriptions of emotions they felt they portrayed in the scene, the test developers' review of the scenes, the responses of three independent judges (clinical experts in child and adolescent psychiatry), and responses of children in the pilot studies. Two scores are obtained:

1. The emotion score, based on identification of each character's feelings in each scene. The child's responses are scored as: accurate (2 points), partially correct (1 point), or wrong/too vague/omitted (0 points). In order to ensure that children with limited labeling abilities are not penalized, nonstandard wording may be used to identify emotions (e.g., "yuck" or "grossed out" is accepted for "disgusted"). Scene scores are added to get a Total Emotion Score (TES). The maximum possible score is 85 (based on number of emotions portrayed in all 10 scenes; in 5 instances, 1 is the maximum score for a character who does not display any apparent emotion).
2. The nonverbal cues score, based on giving one point for each nonverbal cue category which is correctly mentioned for each character in each scene. The nonverbal cues are categorized into facial cues, body cues, voice cues such as tone or rate, and cues related to the context (e.g., getting a present). For example, if the child mentions a facial cue (e.g., could tell how he was feeling "by his face") and there is a facial cue listed on the answer key, the child receives one point. If the child then elaborates and says "he was smiling" when the character was actually frowning, the descriptor is noted as wrong and commented on in the qualitative section but the child still scores one point. Thus, the child's cues score reflects his/her attention to cues, whether accurate or inaccurate. Qualitative information on the misinterpretations of these cues may be of particular significance clinically. Scene scores are added to obtain a Total Cues Score (TCS). The maximum possible score is 134. This is based on 1 point for each cue category (range 2-4/emotion) used to portray each of the 46 emotions.

Qualitative information about the manner in which the child responds to the measure is also obtained. This includes the child's projections of his or her own feelings, the ability of the child to attend to the video and recall information, the child's response pattern (e.g., giving many unrelated answers in a "shotgun" approach), knowledge of labels of emotions, the ability to accurately integrate the individual cues in scenes such as the one with the incongruent cues, interactions with the examiner, unusual descriptions of emotions, and general speech and language skills. The information obtained relates to Doble and Magill-Evans' (1992) model of social interaction and is used to guide intervention approaches.

To begin measuring the validity of the CASP, the measure was used with a sample of typically developing children. Two hypotheses related to construct validity were tested:

1. Social perception as measured by scores on the CASP increases with age of the respondent.
2. Scores on the CASP are not significantly correlated with a child's expressive vocabulary (to be valid, the CASP must measure something other than expressive language abilities).

Participants

A total of 212 children drawn from seven schools representing the range of socio-economic status and ethnicity within Edmonton, Alberta, Canada completed the CASP. Children who spoke English as a second language or were funded for special needs (for social, emotional, physical, or academic delay) were excluded from the study. Approximately 14% of the participants were non-Caucasian (e.g., Aboriginal, Asian, black, etc.) which is similar to the proportion in the general population in the Edmonton area. The children ranged in age from 6 to 15 years old (M = 10.5; *SD*

TABLE 1

Total Scores by Age Group and Gender: Means and Standard Deviations

	Emotion scores[a]			Cues scores[b]	
Age group	*n*	*M*	*(SD)*	*M*	*(SD)*
Ages 6, 7	44	20.1	(5.8)	25.2	(8.6)
Boys	24	19.6	(6.0)	23.4	(9.2)
Girls	20	20.7	(5.7)	27.4	(7.3)
Ages 8, 9	41	28.9	(8.2)	36.5	(12.7)
Boys	20	25.5	(4.2)	32.7	(10.1)
Girls	21	32.1	(9.7)	40.0	(14.1)
Ages 10, 11	44	35.3	(8.7)	45.0	(11.2)
Boys	19	33.9	(9.3)	42.4	(9.4)
Girls	25	36.4	(8.1)	47.0	(12.3)
Ages 12, 13	42	45.8	(9.1)	53.0	(13.3)
Boys	21	43.3	(8.6)	52.1	(14.8)
Girls	21	48.4	(9.2)	53.9	(11.9)
Ages 14, 15	41	51.2	(8.0)	59.9	(10.4)
Boys	19	50.1	(9.4)	59.1	(11.7)
Girls	22	52.1	(6.6)	60.6	(9.4)

[a]Possible range: 0-86
[b]Possible range: 0-134

= 2.9) and were in grades one to ten (see Table 1). There were 103 males and 109 females with approximately 10 males and females at each age.

Fourteen of the children (6 males, 8 females) completed the CASP twice (see results). They ranged in age from 7 to 13 years of age (M = 9.8). Forty-three of the other children (19 males, 24 females) ages 8 to 11 (M = 10) also completed the Expressive One Word Picture Vocabulary Test-Revised (EOWPVT-R) (Gardner, 1990). The EOWPVT-R was designed as a quick measure of a child's expressive abilities and was normed on 1,118 children ages 2 to 12 years. It is correlated with age (r = .80), with the Peabody Picture Vocabulary Test-Revised (r = .59, N = 1030), and the WISC-R vocabulary subscale (r =.47, N = 684). The split-half reliability ranges from .84 to .92 with a median of .90.

Procedures

Five research assistants (three graduate students, two persons with undergraduate degrees) were trained to administer the CASP. Each reached 85% agreement or better with one other research assistant prior to starting data collection. One graduate student was a qualified speech pathologist who also administered and interpreted the EOWPVT-R. Data were collected over eight months and testing generally occurred in each child's school. In five cases, testing was done in the child's home.

Pairs of research assistants independently rated audiotapes of 17 assessments and independently scored the CASP while it was being administered to 24 other children. The children ranged in ages from 6 to 15 years (M = 11.1). The correlation coefficients between the pairs of testers for both the TES and the TCS were .95 ($p < .001$). There were no significant differences between the scores assigned by each rater in the pair. For individual scenes, correlations ranged from .72 to .94 and all were significant at $p < .001$. The intra-class correlation coefficient (ICC) for the TES for one pair of testers was .94 and for the second pair, .99. For the TCS, the ICCs were .96 and .94. Raters can reach high levels of agreement on the scoring of the children's responses using the scoring guide and following training procedures outlined in the manual.

Results and Discussion

Difficulty Level

The mean score for the Total Emotion Score was 36 (SD = 13.8, range = 8-65). For individual scenes, the maximum possible score was obtained

by at least one person for seven of the ten scenes. Scene difficulty as measured by the proportion of the sample who responded correctly ranged from .27 to .62, close to the desired range of .30 to .70 (Martuza, 1977). The mean Total Cues Score was 44 (SD = 16.6, range = 2-82). There were two scenes on which the maximum score possible was obtained by at least one person. Scene difficulty ranged from .28 to .51. Because of the relatively large amount of nonverbal information in each scene, it was not expected that anyone would be able to attend to or recall all of the available information. All cues must be included in the scoring as any type of cue may be mentioned. This raises the total score possible and decreases the proportion correct.

Internal Consistency

Cronbach's coefficient alpha was .88 for the Total Emotion Score and .92 for the Total Nonverbal Cues Score. This level of consistency indicates unidimensionality of the measure (Martuza, 1977). Correlations between scenes for TES ranged from .23 to .57 and for TCS from .28 to .68 indicating that no scene provided the same information as another scene.

Test-Retest Reliability

On average, the time between testing was 51 days (range: 30-66 days). The 14 children (ages 7-13) required an average of eight minutes less to complete the CASP the second time it was administered. The test-retest correlation coefficient was .83 ($p < .001$) for the Total Emotion Score and .87 for the Total Cues Score. Correlation coefficients for individual scenes ranged from .22 to .74 with the exception of one scene which had a correlation of −.02 for the emotion score. This would indicate that the CASP needs to be administered in its entirety. While the total test score is fairly stable, scene-specific scores are more variable. Because of the small sample size, test-retest reliability needs further exploration.

Construct Validity

Hypothesis 1 stated that scores on the CASP were expected to increase with age as the child's perceptual and information processing abilities improve. What was less clear was whether there would be marked differences between genders in social perception abilities as measured by the CASP. Therefore, the relationships of the CASP scores to age and gender were examined. Total emotion scores were significantly correlated with age, $r\,(211) = .82$, as were total nonverbal cues scores, $r\,(211) = .73$.

A multivariate analysis of variance (MANOVA) with age (10 levels from age 6 to 15) and gender (male, female) as between-subjects variables and the TES and TCS as dependent variables was done. There were significant main effects of age and gender for both the TES and the TCS and no significant interactions for age and gender which is consistent with the literature (e.g., Hall, 1978). For age, the post-hoc univariate *F*-tests were $F(9, 192) = 50.9$, $p < .001$ for TES and $F(9, 192) = 28.2$, $p < .001$ for TCS. Older children scored higher than younger children. For gender, the results were $F(1, 192) = 11.4$, $p = .001$ for TES (effect size using r of .24) and $F(1, 192) = 6.6$, $p = .011$ for TCS (effect size using r of .18). Girls had higher mean scores than boys (girls = 38.2, 46.1; boys = 33.8, 41.2). The scores of girls and boys at each age are shown in Table 2. At three ages (7,

TABLE 2

Scores for Boys and Girls: Means and Standard Deviations

	Emotion scores			Cues scores	
Age group	*n*	*M*	*(SD)*	*M*	*(SD)*
Age 6: Boys	10	14.7	(3.2)	18.2	(9.4)
Girls	10	18.3	(5.0)	24.7	(7.8)
Age 7: Boys	14	23.1	(4.9)	27.1	(7.3)
Girls	10	23.1	(5.6)	30.1	(6.0)
Age 8: Boys	10	27.0	(4.4)	38.2	(10.2)
Girls	11	32.1	(12.7)	38.1	(17.0)
Age 9: Boys	10	23.9	(3.7)	27.3	(6.9)
Girls	10	32.1	(5.7)	42.1	(10.7)
Age 10: Boys	9	31.3	(8.7)	41.8	(9.6)
Girls	15	37.6	(8.4)	47.4	(13.0)
Age 11: Boys	10	36.2	(9.7)	42.9	(9.7)
Girls	10	34.6	(7.8)	46.4	(11.7)
Age 12: Boys	10	41.2	(9.1)	51.4	(16.4)
Girls	10	45.9	(7.5)	52.7	(12.3)
Age 13: Boys	11	45.2	(8.1)	52.8	(14.0)
Girls	11	50.6	(10.3)	54.9	(12.0)
Age 14: Boys	10	50.3	(12.4)	57.4	(12.9)
Girls	12	50.0	(6.6)	58.4	(8.6)
Age 15: Boys	9	49.9	(5.1)	60.9	(10.6)
Girls	10	54.7	(5.9)	63.2	(10.0)

11, 14), boys had scores equal to or higher than girls on the TES. This lack of marked differences at each age may be due to the small numbers and needs to be re-examined once the normative sample is larger. At present, scores in the CASP manual are reported with boys and girls together for each age grouping (see Table 1). However, the findings related to gender differences and the associated effect sizes are consistent with the earlier literature (e.g., Hall, 1984). It is expected that as the size of the normative sample increases, it may be necessary to have separate norms for girls and boys.

Hypothesis 2 dealt with the relationship of CASP scores and a child's expressive vocabulary (as measured using the EOWPVT-R). Forty-three children completed the EOWPVT-R (Gardner, 1990). The mean score for the children tested in this study was 111.58 (SD = 9.7). There was no significant difference between genders. The standard scores on the EOWPVT-R were not significantly correlated with the TES, $r(42) = .11$, or the TCS, $r(42) = .07$. This would indicate that the CASP is measuring something more than the child's vocabulary related to social perception.

A principal components analysis using an oblique rotation was also performed to determine the number of factors which were present in the measure. Sixteen of the 20 scores from the TES and TCS loaded on one factor suggesting the unidimensionality of the measure. This result needs to be confirmed with a larger sample and with a clinical population. The fact that scores from both the scales tended to load on one factor and the fact that the TES correlated with the TCS at .88 would suggest that it may be possible to use one score (the TES) as an indicator of social perception for typically-developing children. Part of this strong association is due to the fact the TCS questions are not even asked unless the child is able to identify an emotion in the scene.

The TCS does offer some unique information, although this result needs to be confirmed. A MANOVA using age group (5 levels: ages 6 & 7; 8 & 9; 10 & 11; 12 & 13; 14 & 15) and gender as between-subjects variables and the four categories of nonverbal cues (face, voice, body, situational cues) as dependent variables was done. There were significant main effects for age group and gender with no interaction effects. For age group, the post-hoc univariate F-tests were significant ($p < .001$) for face, body, and voice cues with $Fs(4, 202) = 9.2$, 96.5, and 30.0 respectively. Older children scored higher than younger children, similar to the findings of Nowicki and Duke (1994). Older and younger children were equally likely to mention information about the situation. For gender, the results were significant only for body cues, $F(1, 202) = 5.3$, $p = .022$. More girls reported information related to the body which is consistent with findings by Rosenthal and associates (1979) for children in grades 3 to 6.

Two of the test developers are currently conducting a study to examine other issues related to the validity of the CASP. The study examines the ability of the CASP to distinguish between adolescents of normal IQ with known social perception deficits (identified as having symptoms consistent with a diagnosis of Asperger's Disorder or Autistic Spectrum Disorder) and adolescents without social perception deficits. To date, only data on 15 males ages 12 to 15 with social perception deficits are available. Preliminary analyses indicate that the TES and the TCS are not significantly correlated with the receptive, expressive, or total language scores of the Clinical Evaluation of Language Fundamentals-Revised (Semel, Wiig, & Secord, 1987). The mean TES is greater than 1.5 standard deviations below the mean for boys ages 12 to 15 in the normative sample. The mean TCS is greater than 3 standard deviations below the mean. The TES and TCS scores were not significantly correlated ($p = .35$). Although the results are very preliminary, the different results for the two scores indicates that, with a clinical population, information which is useful for guiding intervention may be obtained from both scores.

Clinical Utility

In order to be useful for identifying children and adolescents who require additional attention and intervention, it is important to have some standards against which to compare the child's performance on the CASP. To ensure a sample size of 40 per group, adjacent age groups (e.g., age 6 and 7, see Table 1) were combined in order to ensure a sample size of 40 per group. There is a clear developmental progression in the scores (see Figure 1). For the TES and TCS, each age group was significantly different from each adjacent group (using a post-hoc Tukey-B test). However, it must be remembered that the number of children in each age group is relatively small and care must be taken in interpreting the scores. The number of children in each group will be increased as the scale is used and additional scores are added to the data base.

To date, the CASP has been used with approximately 100 children and adolescents with mental health problems and is reported to be useful with this population. Children who need social skills training which focuses specifically on social perception abilities are identified. The CASP scores appear to be sensitive to change when used to assess children with known social deficits who are part of an intensive intervention program aimed at improving social perception skills. A case study by Koning, Manyk, Magill-Evans, and Cameron-Sadava (1995) reported that the CASP scores of a 13-year-old male with Tourette's Disorder and Asperger's Disorder improved

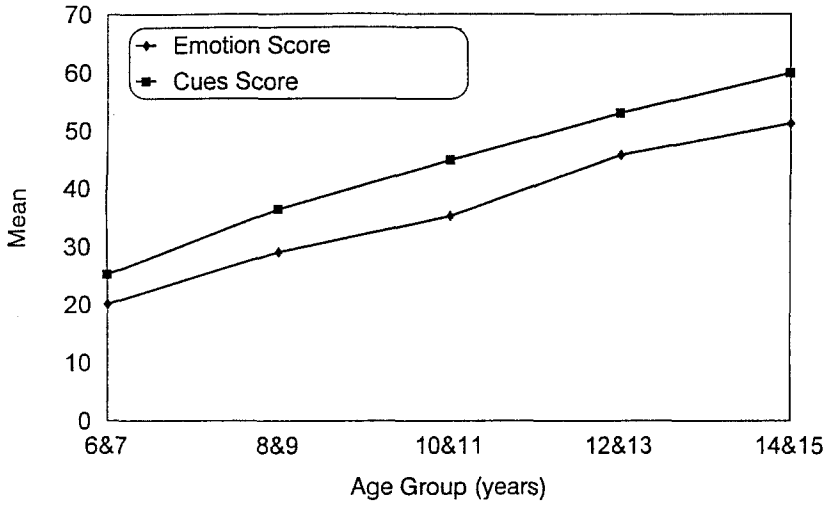

Figure 1. Means for total emotion and nonverbal cues scores.

following intervention. More information on this aspect of the CASP is needed.

Limitations

As with any measure in the early stages of development, the CASP has limitations. These are primarily related to the size and representativeness of the normative sample. The CASP was developed in Alberta, Canada and this may limit the user's ability to identify persons with social perception deficits who reside in different geographical areas or belong to different cultural backgrounds. Despite efforts to include actors from diverse backgrounds, the CASP portrays primarily nonverbal communication used by people who are Caucasian. The normative sample did not include children with cognitive or learning difficulties as defined by the educational setting in which they were tested. Children who spoke English as a second language or children with language difficulties were not included. Caution must be used in interpreting the results for these groups of children. The role of attention and short term memory skills in successful performance on the CASP has not been studied systematically.

The results should be interpreted with caution until further normative data have been collected and more studies of the CASP's psychometric properties are completed (e.g., test-retest reliability with a larger sample; a factor analysis with a larger sample and a clinical sample; concurrent validity). It is not yet clear whether the CASP has the ability to discriminate

between diagnostic groups and predict functioning in real life situations, although studies to address some of these areas are underway. The CASP measures only one aspect of social functioning and should be used in combination with measures of other aspects which employ a range of methodologies (e.g., rating scales, interviews, observations, reports of others). This will allow the examiner to obtain a more accurate and complete picture of the child's abilities and needs.

Conclusion

The CASP is an evaluation tool which yields information about the child's and adolescent's ability to interpret nonverbal cues in social situations. Initial data support its reliability. Construct validity has begun to be addressed. There is a clear increase in scores on the CASP with age. Social perception is reported to increase with maturation during childhood. The scores on the CASP cannot be explained by the child's vocabulary. The CASP can be used clinically to assess children and adolescents with social problems to determine whether or not deficits in social perception are a contributing factor. With this knowledge, intervention can be provided which specifically addresses the identified deficits in social perception and the possible causes of those deficits. The CASP can be used to evaluate changes in social perception abilities following interventions. Although the measure is still in the early stages of development, it appears to hold promise as a clinically useful measure.

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Appendix A: Description of Scenes

1. Guy's Story - One boy is telling a story which he finds humorous to another boy. A girl sitting with them is disgusted by the story. (Duration = 24 sec.)
2. Birthday Gift - A woman gives a teenage girl a gift. The girl is excited when receiving the gift but her expression changes to disappointment when she sees the gift. The girl hides her disappointment. (Duration = 40 sec.)
3. Nintendo - A girl is playing a video game when another girl accidentally bumps the cord and disconnects the game. The girl playing the game is annoyed and the other girl apologizes. (Duration = 35 sec.)
4. Water Fountain Conversation - A boy is excitedly telling a story to a girl. A second boy approaches them. The pair respond with disinterest which the girl masks with politeness. The second boy becomes uncomfortable and leaves. The pair return to their intense conversation. (Duration = 35 sec.)
5. Boy and Mom - A mother is working in the kitchen. Her son enters, telling an exciting story. As the mother listens, she becomes shocked. She rebukes the boy who becomes subdued. (Duration = 24 sec.)
6. Test-takers - Three girls and a boy are seated in a classroom. The students then hand in their tests to the teacher. The boy hands in his test with confidence. One girl appears worried. The other two girls have neutral expressions. (Duration = 22 sec.)
7. Lunchroom - A girl seated at a table is joined by a boy who is very angry. She tries to calm him down. The boy becomes calmer and begins to relax. (Duration = 28 sec.)

8. Trio - Two girls and a boy walk behind a building with a can of beer. One girl is nervous and uncomfortable while the others are excited. When one girl is reluctant to drink, the other two try to pressure her to drink. (Duration = 37 sec.)
9. Schoolmates - A girl is seated at a desk. Another girl enters and begs her to lend her a piece of work. The seated girl reluctantly lends the work to the other girl's relief. (Duration = 26 sec.)
10. Busy Parents - A mother and father are working on bills. Their son enters the room expectantly but leaves looking annoyed when his parents ignore him. (Duration = 19 sec.)

Appendix B: Test Protocol

I am going to show you some segments of a videotape. They are all different. They are not part of the same story. The sound has been changed so you will not be able to hear exactly what the people are saying. Don't worry if it sounds strange. After each segment, I will ask you some questions about what each of the people were feeling in the scene. The scenes are short. People may have more than one feeling in a scene. Pay close attention to what is going on. I will write down your answers so I can remember what you said.

Do you have any questions?

(AFTER THE SCENE IS SHOWN)

Tell me what happened in that scene.

Allow the child to respond and describe the scene. If the child DOES NOT mention all of the emotions felt by all the characters or fails to mention a character ask:

What were each of the people feeling? Tell me everything they were feeling.

For each emotion identified repeat the following questions:

How could you tell that *(the girl)* was feeling *(sad)*?

character use child's words