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Socially in Action-Peers (SAp): Validation by Means of Confirmatory Factor Analysis (CFA) and Similarity Structure Analysis (SSA)

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Abstract: This study aimed to demonstrate the value and psychometric qualities of an instrument that assesses social competence for children in critical social situations within the relationships with peers in the school context - Socially in Action-Peers (SAp) using Confirmatory Factor Analysis (CFA) and Similarity Structure Analysis (SSA). This instrument was administered to 182 Portuguese children aged between 8 and 11 years, of 3rd and 4th grades. These children were assessed by three sources: themselves, their peers and their teacher. Additionally, we used the Test of Emotion Comprehension (Pons & Harris, 2002; Pons, Harris & Rosnay, 2004) to assess SAp's criterion-related validity. Mean differences results in SAp by gender were analyzed. Concerning to gender, we only have found gender significant differences in a few items and in the general assessment made by teachers, in which girls being considered superior. The results of the SAp's psychometric analysis are satisfactory, both in terms of items' sensitivity and reliability (internal consistency) in three versions (self-assessment, peer and teacher). Finally, we performed a confirmatory factor analysis that confirmed that the model underlying the instrument's rational: a hierarchical model with a 1st order factor (composite social competence) that has three factors of 2nd order (consisting of the three sources of evaluation: self, peers and teacher). In addition the CFA data were analyzed through Louis Guttman's SSA - a non-metric multidimensional scaling (MDS) procedure. CFA and SSA confirmed the psychometric qualities of SAp and identified the subscales and dynamic relationships between them. Implications of these findings for social competence assessment and intervention in childhood are discussed, as well as, the advantages and disadvantages of CFA compared to SSA for empirical validation of psychological constructs are examined.

1. Introduction

There is a large panoply of definitions of social competence, some of them are quite broad, others quite specific. A lack of consensus has, naturally, led to methodological limitations in research plans and also in theo assessment and intervention in social competence. The **effectiveness in social interaction** and the ability to guide behavior in order to achieve personal goals in social situations have been considered central aspects in most of definitions of social competence. The several models of social competence have focused in specific skills, sociometric status, functional relationships and outcomes (Rose-Krasnor, 1997).

In this article we adopt the model of social competence of Ford (1982; Tisak & Ford, 1983). For Ford (1982), social competence is defined by "*the attainment of relevant social goals in specified social contexts, using appropriate means and resulting in positive developmental outcomes*" (p. 323). In this assessment instrument, the goal is related to being able to act effectively in socially challenging situations with other people, in this case with peers.

Thus, according to Ford's Systems Model (1982; Ford & Tisak, 1983) a **socially competent child**: (1) is oriented to goals, acting deliberately and with effort, (2) has greater motivation for social goals (e.g., maintaining relationships with adults and peers, making and maintaining friendships, helping others with their problems) than for non-social, (3) has skills that allow her to achieve those goals, for instance interpersonal problem solving and means-ends thinking (cf. Spivack, Platt & Shure, 1976), and (4) has intention to improve goals and knows how to do it, (5) is able to monitor transactions with the social contexts and personal skills, (6) is able to evaluate feedback information; (7) and shows empathy (sensitivity to behaviors, goals and feelings of others, cf. Feshbach , 1975) and consequential thinking (can assess the personal and social consequences of her behavior, cf. Spivack, Platt & Shure, 1976).

Our focus in this paper is on children's adjustment with peers within the school context. Through relationships with peers, children have the opportunity to develop social skills relevant to their harmonious development.

The importance of peer acceptance and friendships increases with age during elementary school (Sullivan, 1953, cit. by Rose-Krasnor, 1997). At this stage, the child needs to understand and behave according to the social challenges of this context. The maintenance of positive social relationships and peer acceptance are good indicators of social development in childhood (Crick & Ladd, 1990). Some of these behaviors, such as prosocial behavior, facilitate the acceptance and popularity of these children (Hymel, Vaillancourt, McDougall, & Renshaw, 2002, cit. per Kwon, Kim & Sheridan, 2012; Mostow, Izard, Fine & Trentacosta, 2002). Likewise, the level of social competence influences some school indicators, such

as: children with a level of social competence have a lower level of academic performance (Ahmed, 2006; Izard, Fine, Schultz, Mostow, Ackerman & Youngstrom, 2001; Kwon et al. May 2011; Stipek & Miles, 2008; Mostow et al. 2002; Wentzel, 1991); children with a higher quality of friendships, support from friends and less aggressive behavior toward peers are more committed to school (Kwon et al. 2011; Perdue, Manzeske & Estell, 2009). Social skills and academic competence mediates the relationship between emotional knowledge and peer acceptance (Alves, 2006; Mostow et al., 2002). The existence of difficulties in relationships with peers appears associated to the manifestation of externalizing behavior problems (eg, aggressiveness) and internalizing (e.g., depression, social anxiety) (Anderson & Messick, 1974). In the same line, rejected children with poor social skills (aggression and shyness/withdrawal) are more likely to have adjustment problems in the long term, such as school dropout, youth and adulthood criminality, as well as psychopathology in adulthood, which makes these children an at-risk group (Parker & Asher, 1987). These limitations in social competence are reinforced by the emphasis on peer acceptance: Ford (1982) noted that socially competent adolescents give higher priority to social goals than to nonsocial.

The quality of peer relationships is both a cause and a consequence of social competence. Rejected children are promised opportunities to develop their social skills, as long as they have fewer opportunities to have positive interactions with peers, to learn and develop socially adaptive behaviors. Cumulatively, social competence in school can negatively affect school performance, which affects the first recursively. So, given the critical role played by social competence in childhood, its same assessment is of crucial importance in terms of research, intervention and prevention.

1.1. Developmental contributes

As mentioned above, the effectiveness in interaction must be considered from the point of view of developmental goals/ tasks, and according to Waters and Sroufe (1983), "competence assumes the status of an organizational construct. Competence is not one of the personal resources (…). Competence is identified with the ability to coordinate these resources in pursuit of adaptive goals." (p. 3). Thus, the characterization of the social developmental profile is extremely important to inform the construction of instruments for assessing social competence.

The nature of social functioning changes in middle childhood (Denham, 2007). The child starts to have a tendency to maintain a "cool emotional front". Dodge, McClaskey, and Feldman (1985) created a taxonomy of social situations in relationships with peers in elementary school children (1st to 5th grade) that can lead to social difficulties. From the situations encountered, they created 8

categories: (a) meeting the standards of the peer group (e.g., group work in class, which requires cooperation and sharing), (b) being identified as different by peers (e.g., a funny or peculiar way of walking), (c) attempting to join a peer group for playing, (d) respond to a peer's ambiguous provocations, (e) being excluded or rejected by the peer group, (f) being identified as superior in some domain by peer group, (g) responding to a failure (e.g., losing a game), and (h) responding to negative statements made by peers (e.g., being called mean names). Based on this taxonomy, the authors developed the Taxonomy of Problematic Social Situations for Children, with 48 items, based on which teachers assess students' social behavior. In addition, the authors also used 15 of the 48 items to assess children's attempt solve conflicts in these situations.

1.2. Social competence assessment

As an outcome the theoretical dispersion and the general interest in the topic, instruments for the assessment of social competence have proliferated (for a review see up Candeias, 2001; Crowe, Beauchamp, Catroppa & Anderson, 2011; Denham, 2005; Denham, Ji & Hamre, 2010). Assessment instruments of social competence have had different formats, such as behavioral rating scales, sociometry, observation, performance tasks. The **traditional instruments** for assessing social competence help us to obtain relevant information about children's social behavior, but tend to emphasize intra-individual variables, giving little importance to contextual factors that naturally influence their social behavior (Warnes, Sheridan, Warnes & Geske, p. 174). Many of these instruments assess it from a broadband perspective, such as rating scales do, they end up losing specificity, reliability, and discriminant validity, unlike the more situational evidence. However, the latter tend to lose stability over time (Waters & Sroufe, 1983). These approaches lack the ability to assess the functional nature of social behavior that is necessarily transactional (Ford, 1982; Krasnor-Rose, 1997). The use of a multi-method, multi-source and multi-setting instruments may help to overcome this limitation, but it can be time consuming and expensive.

The conceptualization of social competence as effectiveness in interaction is associated with the characteristics of being transactional (i.e., is the joint product of the interaction of the individual with the social environment), dependent on the context (which has makes assessment **focusing** more on tasks or situations) and is an organizer construct (and not presentation a set of pre-defined behaviors) and related to specific goals. These characteristics should be taken into account in the preparation of instruments for assessing social competence.

Since the naturalistic studies (i.e., that use real behaviors) are difficult to implement and operationalize the construct, instruments' validity can be enhanced using different performance tests (or from different scores) to form a composite

index or to analyze the profiles (Waters & Sroufe, 1983). Finally, to ensure greater ecological validity, these authors suggest the use of critical situations or transactions, instead of global ratings of typical performance (e.g., items such as "is cooperating", "does not get involved in fights"). These situations are critical in the sense that they tax the child's ability to deal with the core issues of the development she is in, as well as to the cognitive processing characteristics of each age.

In the same vein, Erdley and Asher (1999), reinforced the importance of using critical social tasks, since children face, in their reality, socially challenging situations (e.g., ambiguous provocation, conflict, social failure) and, moreover, it is in such situations that children with behavior problems tend to exhibit difficulties, since they tend to follow maladaptive social goals (e.g., retaliation goals) and tend to make different interpretations of their failure (e.g., some adopt a helpless response pattern, leading to withdrawal from social interaction; while others show a mastery oriented pattern, increasing their effort in social terms; Erdley, Cain, Loomis, Dumas-Hines, Dweck, 1997). Several authors have already used challenging situations for the assessment of social competence (e.g., Ford, 1982; Lopes-da-Silva, 1988; Spivack et al., 1976; Candeias and colleagues, 2001, 2003, 2005, 2008, 2012).

As to the evaluators of social competence, peers and teachers have the opportunity of being primordial observers of social behavior of children in schools, since they share the same context. Children's behavior varies naturally according to the context and situations in which they are; similarly, the expectations of different observers related to children's behavior also vary. Peers and teachers tend to show a moderate consensus (Achenbach, 1987; Alves, 2006; Renk & Phares, 2004) in the assessments that are in this area, however each of them manifest different perspectives as long as they interact differently with the child: the teachers have more opportunities for observation in instructional contexts, whereas peers have them in different contexts.

In **short**, given the definition of social competence adopted here, as well as to the empirical contributions discussed above, the assessment tool being analyzed here relies on socially critical situations, developmentally relevant to middle childhood and in the relationship with peers in the school context, using multiple evaluators (trying to use rates of each source, but also a composite score).

1.3. Socially in Action-Peers: Social competence assessment in children with social critical situations with peers

The development of this Portuguese instrument here in review, Socially in Action-Peers (SAp - Candeias & Rock, 2012), had as reference the Social Competence Nomination Form (SCNF - Ford, 1982), considered one of the most reliable and valid assessment tool for social competence (Candeias & Almeida,

2005). It is an instrument for assessing the social competence of situational nature, whose critical situations involve interaction with peers in the school context. SAp is targeted for children aged between 7 to 11 years old. There are other previous versions of this instrument for children (more general in the type of situations), for adolescents (general) and for adolescents in the domain of career development (Candeias et al., 2008; Candeias, 2001, 2004, 2005; Araújo, Taveira & Candeias, 2009, and Pinto, Taveiras, Candeias, Araújo & Mota, 2012).

In this instrument, social competence is conceptualized according to Ford's definition (1982; Ford & Tisak, 1983). Recalling: the achievement of personal goals in social contexts, using the appropriate means and achieving positive results according to the level of development. In SAp, the objective in question is about being able to act effectively in challenging social situations with peers in the school context.

2. Method

2.1. Sample

Data was collected in three public elementary schools in a Portuguese city (Évora - 50.000 habitants). Students from 10 classes from 3rd and 4th grade (5 classes each grade) were invited to participate in this study. 88,5% obtained parental consent to participate. Students with severe education needs were excluded from sample.

The final sample is constituted of 182 children aged between 8 and 11 years (M = 8,81; SD = 0,77); 52,7% (n=96) are boys and 47,3% (n=86) are girls; 51,6% (n=94) are from 3rd grade and 48,4% (n=88) from 4th grade. 7 children (3,85%) are from other nationality other than Portuguese (e.g., from eastern Europe countries, German, Dutch, Brazilian), but all are fluent in Portuguese. Finally, regarding the schooling (number of years) of the children's mothers (which is considered a good index of socioeconomic status), 1,1% (n=2) are analphabets; 16,48% (n=30) have elementary school; 10,99% (n=20) have middle school; 32,97% (n=60) have secondary school; 36,81% (n=67) have higher education (8,96%, n= 6, of which have masters; and 2,99%, n=2, have PhD), and 2,2% (n=4) have not responded.

2.2. Instruments

2.2.1. Socially in Action-Peers

The instrument consists of six critical hypothetical social situations that require a variety of behavioral, emotional and cognitive skills. This new version (SAp) was prepared taking into account issues of social development in terms

of social interaction with peers relevant for this stage of development (Denham, 2007; Dodge et al.; 1985; Waters & Sroufe, 1983). In general terms, the SAp assesses social competence in children in critical social situations with peers in the school context: E. Spokesman situation (example); 1. Group work situation; 2. Integrating a new classmate situation; 3. Leading a group situation; 4. Visiting a sick classmate situation, and 5. Conflict situation; all available on Appendix).

In the adaptation of this instrument for the scope of relationships with peers, the writing of the situations was revised to facilitate understanding by children; some situations were eliminated (those involving teachers and parents), and new situations involving only peers were added. These situations were presented to two senior researchers in the field of Psychology, 1 elementary school teacher, 1 educational psychologist, and 10 children from 3rd and 4th grades, with the aim of analyzing the adequacy and appropriateness of the situational content for children this age. We also analyzed the comprehensibility of situations, their ambiguity, credibility, objectivity and clarity of the wording and their questions for the purpose of the study (Almeida & Freire, 2007).

Each child was evaluated in each situation by the three sources in order to obtain a panoramic assessment. Firstly, the child makes a self-assessment of her perceived competence in each of the situations, using a Likert-type scale (bad -1, medium - 2 and good - 3). Then, each child is asked to nominate three classemates (boys or girls, without needing to rank them) in her class perceived as the most competent to resolve each situation. Finally, the teacher evaluates the performance of each child using the same scale as the one used in self-evaluation version. In the format of peer assessment, we used the method of positive nominations instead of the evaluation of all classmates, because we felt that in developmental terms it would be difficult for these children to do it in a discriminant way to all colleagues.

For the instrument's scoring, example situation is not considered in the calculation of scores, as long as it has been used in order to help children to get familiarized with the test and the answer format. Several scores may be obtained for each child: (1) scores per rater, which consists on the mean of the five situations made by each rater (self, peers and teachers); (2) scores per situation, which consists on the mean of three sources scores in each situation; (3) composite score of social competence: which consists on the global mean of the three sources in all situations. In the case of peer assessment we counted the number of nominations that each child had in each situation. Since the classes in which children were placed had different number of students, t scores were calculated for each situation raw result. Cumulatively, considering that this procedure was going to generate different magnitudes in inter-rater metrics, we also calculated t scores for the self and teacher's ratings.

Finally, and to increase the predictive ability of the instrument, since each rater has systematic biases in their assessment, as result of the perceived

(ir) relevance of certain behavioral data and the same selective attention, and considering the recommendations of previous studies (Ford, 1982; Waters & Sroufe, 1982); we calculated a composite score of social competence. Thus, it is possible to have a composite vision and also 3 specific ones according to the perspective of different social actors.

2.2.2. Test of Emotion Comprehension

The Test of Emotion Comprehension (TEC, Pons & Harris, 2000; Pons, Harris & Doudin, 2002; Pons, Lawson, Harris & de Rosnay, 2003) is divided into a sets of stories in an established order. The test evaluates the following components (corresponding to the theoretical dimensions of understanding of emotions): understanding of the (1) recognition of emotions based on facial expressions, (2) external causes of emotions (e.g., being sad when a pet dies), (3) assigning a desire as a cause of an emotion; (4) the role of beliefs in determining emotions, (5) the influence of memory in circumstances of assessment of emotional states, (6) the ability to regulate emotions, (7) the ability to hide or conceal an emotion; (8) that a person can have mixed emotions (e.g., happiness and fear at the same time) in relation to a given situation, and (9) the role of morality in emotions.

There is a version for boys and girls, and it consists of a booklet of illustrations with a story that is read for each situation and in every sheet are presented four possible outcomes represented by emotional facial expressions (there five options: happy, sad, angry, afraid, OK). The children are asked to assign an emotion represented by a facial expression to the situation. The instrument is also available in computerized format, where questions and stories are narrated by a female voice. The scoring is made automatically by the computer application. In this study we used the computerized format, only the male version, since this is the only available up to now for the European Portuguese.

Children's responses are nonverbal, considering that cross-cultural studies establish that facial expressions related to situations are similar across cultures. This test has been used in many countries around the world, being translated into 15 languages, is now being adapted into Portuguese (Portugal and Brazil).This test can be used with children aged 3 to 11 years. Each child can get a score between 0 and 9.

2.3. Procedure

Prior to data collection, authorization for this study was obtained from the Ethical Panel of the Portuguese Ministry of Education, the National Commission for Data Protection, the three schools' principals, and finally, permission from parents of each child.

Data collection took place between March and June 2012. The administration of these tools is part of a larger study that sought to examine the relationship between the understanding of emotions, social competence and emotion regulation in children.

The SAp was administered in group in the classroom in the presence of the class teacher. We explained the study purpose to the children, assuring data confidentiality and voluntary participation. The instructions and situations were read aloud by the researcher and the children accompanied the reading. Firstly, the children made their self-assessment, and then they did the nominations of peers for each situation, situation to situation sequentially. Finally, a form was distributed to the teacher with the same situations. The administration of this instrument took approximately 30 to 45 minutes per class. Scoring was done according to the procedure described above.

Regarding the administration of TEC, it was done individually with each child in a quiet place, using a laptop computer. The instructions were explained to the child and were clarified their doubts. The computer application automatically recorded and quoted the child's response. The administration of TEC took about 15 to20 minutes with each child.

Finally, children's results were reported back to their parents who have expressed will to know about it.

3. Results and Discussion

3.1. Descriptive statistics and reliability analysis

The items of each SAp raters-version were submitted to a descriptive and internal consistency analysis, as follows in Table 1. Generally, all the items have an adequate distribution along the likert scale used and adequate Skewness and Kurtosis values (bellow 3 and 7, cf. Kline, 1998), which indicate that the results follow a normal distribution. The discriminative power of the items on different versions also has acceptable results (corrected item-total correlations - CITC), although they were lower in the self-evaluation version.

The same way, the reliability coefficients assessed with Cronbach's Alpha (α) (Nunnally, 1978) for this version and its items were low (α =,561 for the total self-evaluation scale); but the internal consistency index for the peers and teacher's versions have adequate results (α = ,876 for peers version, and ,842 for teacher's version). This difference in the results between raters may be due to the fact that, as Ford (1982), mentioned and find before "s*elf-judgments are more situation specific than judgments by others, which tend to be more traitlike*" (Ford, 1982, p.330).These last values (peers' and teachers') are above the studies

of Ford (1982) in which the author used a sample of 600 American Adolescents (α = .76) and Candeias (2008) with a sample of 441 Portuguese children (α = ,82). Globally, this reliability results are good considering the fact that the each version has only 5 items.

Table 1. Descriptive statistics and reliability analysis for the Socially in Action-Peers (based on raw data).

N = 182 for all items.	Situa-tion	M	SD	SEM	Range	Skewness	Kurtosis	CITC	α if deleted
Self-evaluation version (α=,561)	1	1,550	,644	,048	0-2	-1,128	,136	,371	,477
	2	1,736	,478	,035	0-2	-1,533	1,358	,221	,555
	3	1,522	,645	,048	0-2	-1,017	-,074	,414	,451
	4	1,604	,654	,049	0-2	-1,410	,712	,441	,434
	5	1,127	,823	,061	0-2	-,240	-1,486	,207	,597
Peers version (α=,876)	1	2,791	3,593	,266	0-16	1,665	2,188	,667	,872
	2	2,725	2,597	,193	0-15	1,637	4,023	,713	,849
	3	2,665	2,862	,212	0-14	1,636	3,254	,801	,826
	4	2,714	2,602	,193	0-12	1,447	2,312	,738	,843
	5	2,692	2,304	,171	0-10	,936	,481	,679	,859
Teacher's version (α=,842)	1	1,214	,746	,055	0-2	-,370	-1,121	,731	,786
	2	1,517	,628	,047	0-2	-,941	-,155	,719	,794
	3	1,082	,757	,056	0-2	-,138	-1,238	,676	,802
	4	1,610	,591	,044	0-2	-1,245	,546	,645	,814
	5	1,225	,750	,056	0-2	-,396	-1,127	,504	,851

We found significant positive correlations between results from all versions, as follows: self-evaluation – peers (r = ,293; p < 0.01), self-evaluation-teacher (r = ,225; p < 0.01) and peers-teacher (r = ,596; p < 0.01). This results are similar to those found by Rank and Phare's (2004) meta-analysis about concordance

between raters, in which the highest correlation found was between peers and teacher (r = , 48) and the lowest was between self and teachers (r = ,25). These results are also similar to Ford's (1982): peers-teacher (r = between ,57 and ,71), self-peers (r = between ,30 and ,48) and self-teacher (r = between ,22 and 0,43).

Considering now the results by situation, we calculated the average of all raters (self, peers and teacher) per situation. The composite results correlated significant and positively in all situation, ranging from r =,387 to r =,749.

3.2. Confirmatory Factor Analysis

A Confirmatory Factor Analysis (CFA) was performed in order to test the adjustment of the composite model underlying SAp, in which it is possible to have a composite score that encompasses the three sources of social competence assessment: self-evaluation, peers and teacher. The analysis has been performed with AMOS 20.0. The data was previously standardized into z scores. We used the procedure of Maximum Likelihood (ML) as an estimation method, which is better suited in terms of the statistical processing for relatively small samples (200 to 500 subjects). Fit indices chosen were chi-square analysis, GFI (Goodness-of-Fit Index), PGFI (Parsimony Goodness-of-Fit Index), CFI (Comparative Fit Index), PCFI (Parsimony Comparative Fit Index) RMSEA (Root Mean Squared Error of Approximation) and AIC (Akaike Information Criterion), taking the indices suggested in the literature (Marôco, 2010). We've considered the following values indicative of good fit: CFI and GFI superior to ,90; PCFI and PGFI superiors to ,60; $\chi 2/gl<2$ and RMSEA inferior to ,60. Finally, model's adjustment was made using modification indices by Langrage multipliers (LM), considering that trajectories and/or correlations with LM>11 (p<,001) were indicative of a significant variation of model's quality.

CFA hierarchical structure of SAp with the original model had a modest adjustment to this sample ($\chi 2/gl$ = 2,306; GFI = ,867; PGFI = ,628; CFI = ,884; PCFI = ,732; RMSEA = ,085). According to modification indices (LM>11, p<0.001) correlations between errors were performed. The new model (correlating errors 7 and 9, 12 and 14, 5 and 11) has shown a good level of adjustment ($\chi 2/gl$ = 1,562; GFI = ,908; PGFI = ,635; CFI = ,952; PCFI = ,761; RMSEA = ,056). The difference of adjustment's quality of these two models is show by a decrease in AIC from the first to the second model (266,602 to 203,172, respectively).

Figure 1 shows factorial loadings and individual reliability of items (situations) of each factor, as well as the correlations between errors that have been performed to improve model's level of adjustment. All trajectories between the second order factors (self, peers and teacher evaluations) and the first order factor (composite score of social competence) are statistically significant; the same has happened to second order factors and items. The greater influence of

composite social competence is over teacher's evaluation (,89), followed by peers' evaluation (,79) and self-evaluation (,50).

Previous versions of this instrument have only performed Exploratory Factor Analysis, in which has emerged a somewhat different structure then ours, which is plausible, considering that versions for adolescents (PACS and PACS-CC) and for children (SA) have situations that involve peers and adults (teachers and parents), as long as ours only has situations with peers. The adolescent version (PACS) has a structure of 6 factors (Candeias, 2001; 2005) and the children version (SA) has 2 factors (Candeias, 2008). Considering the last one in more detail, the factors are related to general social competence (factor 1) and to situational aspects of social competence (factor 2) related to interpersonal communication and leadership in academic contexts.

As said before, considering the adjustments made to the initial model to improve adjustment indices, correlations between errors have been performed, according to LM>11 ($p<,001$). Correlation between errors 12 and 14, was the biggest one ($r = ,480$; $p<,000$), followed by the correlation between errors 5 and 11 ($r = -,450$; $p<,001$), and 7 and 9 ($r = ,290$; $p<,002$). These errors are associated to situations/items as follows: error 12 – situation 2, teacher; error 14 – situation 4, teacher; error 5 - situation 1, self-evaluation; error 11 – situation 1, teacher; error 7 – situation 2, peers; and error 9 - situation 4, peers.

These correlations may be interpreted analyzing situations/items contents. The correlations between errors of situations 2 (integrating a new classmate situation) and 4 (visiting a sick classmate situation) of teacher's version may be explained by the fact that both situations involve skills related to pro-social behavior, making and maintaining friendship. The same happens with the correlation of errors of situations 2 and 4 in peers' version. This finding may also enhance that the skills associated to this two situations are seen aggregated by these two sources. Finally, the negative correlation of errors of situations 1 (group work situation) of self and teacher's evaluation; this situation is related to pro-social behavior in the context academic tasks, showing us that this two sources consider different relevant aspects for the successful accomplishment of this situation. It may be possible that children find more relevant to use friendship skills and teacher academic skills for being able to help other classmates with difficulties in academic tasks.

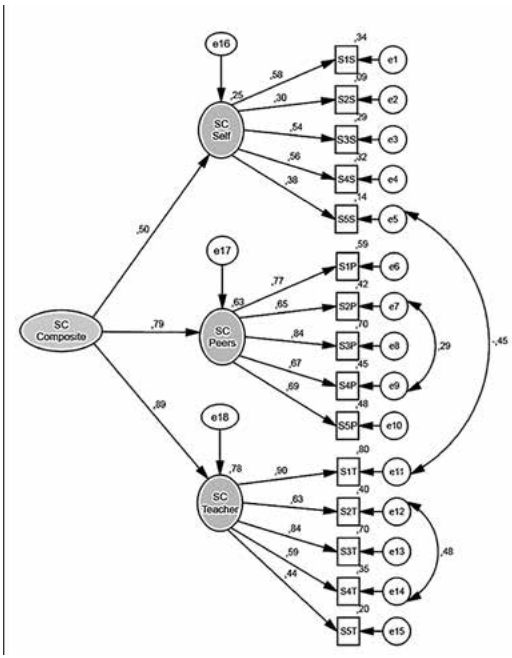

Fig. 1. Confirmatory Factorial Model between composite social competence; self-evaluation, peers' evaluation and teacher's evaluation of social competence, and situations (x2/gl = 1,562; GFI = ,908; PGFI = ,635; CFI = ,952; PCFI = ,761; RMSEA = ,056).

3.3. Similarity Structure Analysis

In this section we present results concerning the facets of Socially in Action-Peers items (5: self-evaluation; 5: peers' evaluation; and 5: teacher's evaluation of social competence). For this analysis we relied on a multidimensional scaling approach using the SSA (Smallest Space Analysis - Guttman, 1965; or Similarity Structure Analysis - Borg & Lingoes, 1987). Figure 2 shows the SSA projection of the first two vectors of the three-dimensional space. The coefficient of alienation, which is the stress measure applied in SSA for assessing the goodness of fit was 0,073, indicating a good fit between the SSA solutions and the input correlation matrices. In this figure each point represents an aspect of the SAp items.

A polar structure can be observed dividing the space according to the three of sources of evaluation – self, peers and teacher. While in the left side of the plot are located the self-evaluation items, on the right side of the plot we observe the peers' evaluation items (upper region) and teacher's evaluation items (bottom part).

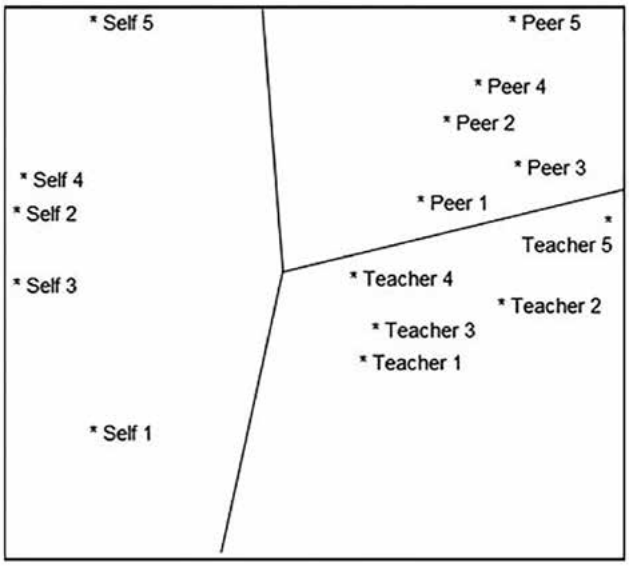

Fig. 2. SSA projection of the Socially in Action-Peers items (5: self-evaluation; 5: peers' evaluation; and 5: teacher's evaluation of social competence).

Concordantly with CFA, SSA shows us that peers and teacher's evaluations are more clusterized than self's evaluation. Self-evaluation's situations have more disperse results, which may be due to the fact that children's have a more situation specific judgment than others, which tend to be more general (Ford, 1982; Candeias, 2008; such as mentioned earlier). Peers and teachers tend to have a closer evaluation, than compared to self, as long as self vs. peers and teachers situations are more distant, plotted on opposite sides of the structure.

Analyzing each facet/evaluator, in self-version is possible to see that situations 1 (group work) and 5 (conflict resolution), and 1 and 2 (integrating a new classmate) are more distant, showing us that they may encompass different nuances of social competence. The closest ones, in self-version, are situations 2 and 4 (visiting a sick classmate). Regarding to peers situations, situation 1 and 5 are the most distant from each other, and 2 and 4 are the closest. Finally, for teacher's situations: again, situation 1 and 5 are the most distant, and 1 and 3 (team leader) are the closest.

It is interesting to note that situation 5 (conflict resolution) which, when compared to the other type of situations, is always located more distant from the center of the polar structure, in all sources of raters, showing us that this situation may encompass somewhat different nuances of social competence. Besides, situations 1 and 5 are always more distant from each other, for all raters. These facts were not yet possible to acknowledge using the descriptive statistics neither CFA.

3.4. Validity evidence based on relations to other variables

3.4.1. Gender

Similar to a vast amount of results in this domain, our results about gender differences were not consistent. We performed Analysis of Variance (ANOVA) and t tests for independent samples in order to compare means by gender in the composite score of social competence (mean of t scores in the 3 three versions), social competence score by version (self, peers and teacher), and between situations (composite scores per situation and each versions' scores). We have found a small number of significant differences in all comparisons.

There were no significant differences between girls and boys in **the composite score for social competence** (F = 3,628; p = ,058), which means that girls and boys have a similar level of social competence in our results. Analyzing results by each evaluator, in the **self-version**, there were no significant differences in the girls and boys self-assessment of global social competence (F = 2,142; p = ,145); the only situation within this version that presented significant differences was the situation 5 (conflict resolution situation) (t = -2,169; p = ,031), in which girls considered themselves better able to handle with this situation. In the **peers version**, there were also no significant differences by gender (F = ,087; p = ,769) in the peers' score of social competence, which means that peers rated boys and girls as equally socially competent . There were also no differences in all the 5 situations in this version. Finally, the **teacher's version** was the only version in which significant differences between composite social competence in genders emerged (F = 6,796; p = ,010): teacher's considered that girls have a superior global level of social competence. As concerned to the teacher's situations, there were significant differences on situation 2 (integrating a new classmate situation) (t = -4,278; p < ,000), situation 4 (visiting a sick classmate) (t = -3,745; p < ,000) and situation 5 (conflict resolution situation) (t = -2,067; p = ,040), in all of them girls with superior results in all these three situations.

These results are similar to those of Ford (1982), in which teachers rated girls globally more social competent than boys. The same way as Mostow et al. (2002) found that teachers tend to classify girls as having a level of prosocial behavior higher than boys. These differences may be due to a different social functioning between genders, but also to the fact that these ratings were made in the school context and, specifically, by teachers, who may overemphasize social behaviors more related to school achievement. In this line, Ford (1982) found a common factor between social and cognitive competence.

3.4.2. Criterion-related validity: emotion comprehension

Considering criterion-related validity, we've focused on emotion understanding variable. Several theoretical and empirical evidences have underlined the connection between social competence and emotional competence in children (Alves, 2006; Denham, Blair, DeMulder, Levita, Sawyer, Auerbach-Major & Queenan, 2003; Halberstadt, Denham, & Dunsmore, 2001; Hubbard & Coie, 1994; Izard et al. 2001; Machado, Veríssimo, Torres, Peceguina, Santos & Rolão, 2008; Mostow et al., 2002; Santos, 2012; Saarni, 1999). Saarni's model of emotional competence considers that this competence is inextricable form social competence. Emotion understanding is one relevant domain of emotion competence, and is conceptualized as a children's general sociocognitive understanding of perspective taking, desire beliefs, intentions understanding related to emotions in their selves and others (Harris, 1989).

Our results confirm that SAp is significant and positively correlated to emotion understanding, assessed by *Test of Emotion Comprehension* (r = ,281; p<,001). Considering the several evaluators used in this instrument, peers' assessment seems to be the one which has an higher level of correspondence with emotion understanding level (r = ,309; p <,001), followed by self-evaluation (r = ,168; p<,023) and teachers (r = ,165; p<,026) . All situations of SAp, except situation 5 (conflict resolution situation) have a significant positive correlation with TEC's overall result. Finally, considering TEC's components, only components IV (belief; r=,246; p<,001), VII (*hiding/concealing emotion*; r = ,190; p < ,010) and VIII (*mixed emotions*; r = ,199; p < ,007) are significant and positively correlated to social competence composite score.

Belief component of TEC is related to the understanding of the role of believes in determining emotion and that requires the comprehension of false belief, which is considered a good indicator of perspective taking, useful in social competence. *Hiding/concealing* component of TEC is related to the understanding of the possibility that internal experience and external expression of emotion may not coincide; so this component may be positively related do social competence as far as for being socially accepted, sometimes, we should not be too much emotionally expressive. The component VIII (mixed emotions) is about the understanding that a person can present multiple or even contradictory emotional answers in relation to a determined situation. This component may be relevant in social behavior as long as it may allow children to have a more flexible recognition of other's emotions and behaviors, and therefore better able to adjust her behavior in social interaction.

In our study, we've obtained similar results to those find by previous Portuguese studies, such as those of Machado et al.'s (2008 – with significant positive correlations between emotional knowledge and peer acceptance; r = ,18

and ,49); Alves (2006; Alves et al, 2008 – with significant positive correlations between emotion knowledge and social competence (r = ,34; p<,001), and Santos (2012), who also used TEC for assessing emotion understanding (with positive no significant correlation between emotion understanding and peers acceptance; r = ,11; with only one component of TEC having significant positive correlations: causes of emotion, r = ,21; p<,05).

4. Conclusion

The design of this assessment instrument of social competence based on the definition of the construct as effectiveness in interaction, managed to keep the theoretical and empirical recommendations, ensuring its transactional nature (insofar as social competence is revealed in the person's interaction with its social environment), their contextual appropriateness (reporting to a specific context: social interaction with peers in the school context, and being related to specific situations), its orientation towards goals (successful interaction with peers), its consideration of relevant developmental social tasks in this phase of childhood, the use of critical social situations that overwhelm the capacities of the child, as well as the use of multiple raters (which ensure the collection of relevant complementary perspectives), are contributions that enhance its predictive and ecological validity.

Data analysis of psychometric characteristic of SAp are satisfactory in terms of sensitivity of items (situations) and in terms of reliability (internal consistency of each of the three raters' versions), or its hierarchical factorial structure, with the demonstration of the existence of the rationale behind the construction of SAp: a hierarchical model with one 1st order factor (composite social competence) that has three factors of 2nd order (consisting of the three sources of evaluation - self, peer and teacher). Demonstration of criterion-related validity was also demonstrated, with the existence of positive and significant correlation with the understanding of emotions. Finally, there were some gender differences in some situations or according to the contribution of the evaluators, which has the merit of providing clues to a differential intervention by gender.

The use of **MDS and SSA**, in particular, enabled us to do a more comprehensive analysis of data. Unlike factor analysis, the dimensions work as a means to enable the verification of different projections of the total configuration, having theoretical considerations in mind in order to decide about the usefulness and appropriateness of a multidimensional solution. Besides, SSA compared with CFA, is less restrictive about the variables: it is not necessary that data have metric characteristics, or that association coefficients to be linear, allowing monotonic coefficients to be used also. In sum, in this type of analysis, looking for facets distribution facilitate the laborious work of theory construction and modification.

Within the **practical relevance** of this instrument, beyond what is just mentioned, it is interesting to re-emphasize the contribution of using multiple informants in the assessment of social competence, not only because each informant has a complementary vision of different contexts in which children circulate, but also because the assessments made by researchers or psychologists can hardly reach children in multiple contexts and in a variety of situations that those raters can.

The collection of composite indices, per rater and/or situation, allow us to identify children at risk of social maladjustment, and based on the strengths and weaknesses will be possible, at a later stage, outline intervention plans according to the specific social skills to consider. For example, the evaluation made by a researcher or a psychologist can use the same situations of SAp to conduct an interview with the children at risk in order to assess the type of strategies and social skills used by them and, from there, the outline an intervention plan. Likewise, in the prevention context, SAp can be used as a control measure to use in pre-and post-intervention.

SAp is an instrument of easy and fast administration, to which children show satisfaction and adhere to respond. However, its scoring is laborious, especially in regard to the counting of peers nominations and to the composite scores calculation. During SAp's administration we could see that the situation 4 (visiting a sick classmate) is considered relatively easy by teachers, and that the situation 5 (conflict solving) is considered difficult for children. So, these situations may need to be revised.

This study has **limitations**, the most notable one is the sample size, which is small and unrepresentative. Another limitation is that we have not used another measure of social competence for external validation of the SAp. This way, in **future studies**, it should be used a larger sample and with a wider range of ages; to use another measure of social competence. In parallel, we could also use the sociometric status to define groups of popular and rejected children to correlate with the level of social competence, and to assess the type of strategies and behaviors they thought they would use by each group.

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Facet Theory

Searching for Structure in Complex Social, Cultural and Psychological Phenomena

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Facet Theory (FT) is a meta-theory for designing structural and other theories in the behavioral sciences. Basic assumptions of FT are that social and behavioral concepts are complex constructs and that their study, therefore, requires a systematic design for defining observations and for examining the correspondence between the observations and the theory. Because such a definitional design should facilitate the evaluation of systematic relations between the data and the theory, it should lead to cumulative results. In the above sense, FT is a systematic approach for coordinating theory and research.

FT comprises the universe of observations, the population of respondents, and the range of observations. It stratifies these universes by facets and integrates the design by means of a mapping sentence which guides the construction of items and the formulation of hypotheses. Finally, particular multivariate data analysis methods (such as SSA, POSAC, MSA) have been developed to test these hypotheses.

Facet Theory has been successfully applied to a large number of research areas where it has significantly contributed to the discovery and refinement of empirical laws.

Our aims in this book are:

1) To review recent and innovative research results arising from the application of the Facet Theory approach to complex social and psychological issues;

2) To present methodological advances in comparative studies and applications of Similarity Structure Analysis (SSA), Multidimensional Scalogram Analysis (MSA), Factor Analysis (FA), Confirmatory Factor Analysis (CFA), Partial Order Scalogram Analysis (POSAC), and other multivariate procedures and techniques related to FT;

3) To present theoretical advances in Facet Theory and related approaches;

4) To present new reflections on the role of Facet Theory in modern science and in the emergence of new scientific paradigms.

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Facet Theory

Searching for Structure in Complex Social, Cultural & Psychological Phenomena

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