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Factors affecting the social ability in pre-school children: An exploratory study

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Abstract

In a previous paper (Braza et al., 1993) we quantified the social ability of pre-school children by means of two Indices: Amplitude of Behaviour (I.A.B.) and Amplitude of Partnership (I.A.P.). The aim of this study is to explore their possible relations with some agents of socialisation and to validate these indices of amplitude as a measure of social ability. The variables considered (biometrical measurements, family characteristics, and social behaviours in peer groups) were ordered by means of a prior analysis of the principal components, and the factor scores of each individual in these analyses were chosen as new variables. Twenty-six pre-school children attending a nursery in Cádiz (SW Spain) were filmed at school during their free-play period. Our results confirm the fitness of the Index of Amplitude of Behaviour (I.A.B.) not only as a useful tool for the study of socialisation, but also as a possible predictor of later success and social adjustment.

Key words: Measurement of social ability; Parental investment; Pre-school children's socialisation; Social competence in context

Introduction

The successful adaptation of an individual to the social and physical world is achieved by means of various processes, such as socialisation, individuation, physical maturation,

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cognitive development, and enculturation (Damon, 1988). Socialisation implies, above all, the acquisition and internalisation of behavioural patterns, beliefs, and rules of the society into which the child is being socialised (Handel, 1988).

Research into children's social life has been fruitful but somewhat fragmented, and the factors of family influence, peer influence, and the child's characteristics have often been considered separately (Salzinger et al., 1988). As such, research to date has produced very diverse results; in the last decade, the emphasis has been on the goal of obtaining measures which can predict social competence and social ability (Denham and Burger, 1991; Turner and Harris, 1984; Vaughn and Langlois, 1983; Vaughn and Martino, 1988; Waters et al., 1983; Walden and Field, 1990).

Most of these approaches have been obtained from multiple sources, such as ratings provided by adults, peer sociometric choices, and behavioural observations in experimental contexts (Asher and Hymel, 1981; Provost, 1992; Vaughn and Martino, 1988). Only a few have attempted to assess the social competence of children by direct observation of their behaviour in natural settings (Lieberman, 1977; Dodge et al., 1986; Schneider, 1992; White and Watts, 1973; Wright, 1980).

Despite the diversity of the theoretical focus, there seems to be agreement about the existence of an early developmental ability in terms of solving the problems that a child faces in social interactions with his/her family and peers (Van Aken and Riksen-Walraven, 1992).

There is no doubt about the powerful influence exerted by the family in many aspects of social development (Thomas, 1990a). Indeed, it has been demonstrated that family reinforcements play a role in the early social development of children and that the parents' values may influence their children's social styles (Eisenberg et al., 1992). Also, other variables, just as kinship relationships, the number of brothers and sisters, the parents' cultural level, and whether the household is 1- or 2-parent (monoparental or biparental) exert a great influence on the later development and social adjustment of children (Soussignan et al., 1987; Zimmer and Witnov, 1990).

On the other hand, the peer group is considered to be one of the most important socialising agents, since it provides each individual with exceptional opportunities for learning and developing skills of social behaviour (Hartup, 1976, 1984, 1985; Ladd and Asher, 1985; Ladd et al., 1988). The peer group clearly forms the most suitable context for facilitating the development of a wide range of social skills: interactions with other children of the same age produce a large number of situations which permit the testing and perfection of many distinct social roles; at the same time, it aids them in shaping an image of themselves and those around them (Kaplan, 1986; Rubin, 1980).

In this sense the psychological and physical features of a boy or girl can influence the social relationships with his/her peers. Some early characteristics of personality can remain stable throughout life, and seem to have a certain predictive validity in terms of evaluating the level of individual social adjustment in adolescence and adulthood (Pogge et al., 1992; Pulkkinen and Tremblay, 1992). Further, some physical features such as attractiveness or the concept each individual forms about his/her physical appearance, can result in an advantage for the child's social success and his/her adaptation to the social world (Thomas, 1990b; Weisfeld et al., 1987). In any case, the social ability in some way implies a certain degree of social experience and flexibility in order to adapt to very diverse types of situations and to distinct social contexts. Achieving a measure of this ability would permit the exploration of the more relevant aspects of the various agents of socialisation involved in the process of social adaptation.

Nevertheless, we agree with Provost (1992) that it is necessary to approach one's study from a multidimensional perspective and with an extensive point of view.

Extrapolating from the above, in a previous paper (Braza et al., 1993), we quantified the social ability of children, by means of two indices: Amplitude of Behaviour (I.A.B.) and Amplitude of Partnership (I.A.P.) during their free-play time at school.

The goal of this study is to use these indices as a target in order to explore their possible relations with some agents of socialisation; specifically, we have emphasised (a) anthropometric characteristics of the individuals; (b) their social behaviour within peer groups; and (c) characteristics of the family.

At the same time, through this study we hope to validate these indices of amplitude of contacts and social behaviours as a measure of social ability in pre-school children.

Materials and Methods

The study was carried out in Cádiz (SW Spain) at a Grammar School during the 1989–1990 school year. The study area was a 190 m^2 space with two distinct tiled zones: one containing a variety of objects (sliding ponds, swings, fountains, trees, stones, benches, etc.) and another without objects, where the study group shared the space with children up to 10 years old.

The study sample consisted of 26 pre-school children (nineteen girls and seven boys) of a single 5-year-old group ($\bar{x} = 61.8 \pm 3.8$ months).

Variables considered

In determining which factors could be related to the process of socialisation, we explored the following aspects:

(A) Body measurements. For body measurements (Table 1) we used those selected by Caro (1986) and Ruiz Sastre (1986) in their physical anthropological studies of Spanish communities. They were obtained during the first two days of the school year.

(B) Family characteristics. In order to obtain data regarding family characteristics, we employed a questionnaire directed to the parents, during the study period. Data used for the characterisation of family parameters are presented in Table 2. These data were contrasted with those offered by the school and with a questionnaire undertaken among the teachers.

(C) Social behaviour. The pre-school children were filmed at least twice a week on non-consecutive days with a video camera (Sanyo UMD6P) during 30 min of daily free play, unaware of the observers and with prior consent by the parents and teachers. The groups filmed were elected at random; none were filmed excessively, in no case did we exceed 5 min of uninterrupted filming.

For this study, we have analysed the first 20 min of filming of each child. The analysis and quantification of the behavioural patterns were accomplished with a Philips VR302 video cassette recorder and a MacIntosh SE personal computer, using custom-designed software based on the analysis program of López-Escobar and Mir (1987). The transition between the different patterns was profited by means of this program, so the resulting data consist of a sequence of patterns realised by each individual.

To analyse the data, a minimum of two trained observers registered the behaviour

TABLE 1

Morphological measurements used

1. Stature	Distance between the interparietal union and the floor
2. Inferior limb length	Distance between the ileo-spinal and the heel-bone
3. Superior limb length	Acromion-dactilio
4. Arm length	Acromion-radial
5. Fore-arm length	Radial-estilion
6. Hand length	Estilion-dactilio
7. Hand width	2–5 metacarpals
8. Trunk	Length of trunk
9. Biacromial width	Acromion-acromion
10. Bicrestal width	External borders of the iliacas crests
11. Weight	
12. Waist	Waist measurement taken from 3 cm above the navel
13. Abdominal contour	Abdominal perimeter, measured at the height of the external borders of the iliacal crests
14. Head width	Eurion-eurion
15. Head length	Glabela-opistocranium
16. Frontal width	Distance between frontal temporal crests
17. Bizygomatic width	Zygoma-zygoma
18. Face length	Nasion-gnation
19. Nose length	Nasion-subnasal
20. Nose width	Distance between the wings of the nose
21. Nose depth	Distance between the most prominent point of the nasal lobule and the intersection of the wings of the nose and the cheeks

TABLE 2

Data used for the characterisation of family parameters

Father's age	
Mother's age at child's birth	
Mother's age	
Family size	Number of members of the family living together
Child's birth order	Child's ordinal position with respect to his/her sibilings
No. siblings	
Distance to eldest sibling	
Distance to next-youngest sibling	
Father's education	Educational level of father
Mother's education	Educational level of mother
Family income	Income in 1989
Average distance between siblings (rank)	
Distance to next eldest sibling (rank)	

shown by each member of the peer group focussed upon, obtaining an interobserver mean reliability of 89.7% for all behaviours calculated as follows: (Σ agreements/Σ agreements + Σ disagreements) × 100.

Afterwards, behavioural sequences were grouped to obtain the proportion of time that each individual spends on each type of pattern. The social patterns considered are based on previous observations (Braza and Braza, 1989) as well as on reports by other authors (Blurton Jones, 1971, 1972). The behavioural elements considered are presented in Table 3. Because the number of pre-schoolers per group fluctuates somewhere around 26 children in the study area, it is not advisable to use more than eight or nine variables. Thus, we tended to group the 22 patterns into eight groups according to their possible motivation.

(D) Intelligence, anxiety and social ability. Keeping in mind the age of the children, their intelligence quotient was obtained through the W.I.S.C. test (Weschler, 1945). This test was carried out individually for each child in the final month of the school year.

In order to measure the degree of anxiety of each subject, and following the work of Tremblay et al. (1985a,b) we selected the social anxiety-withdrawal scale contained in the Questionnaire d'Evaluation des Comportements au Prescolaire (QECP) from Tremblay and Desmarais-Gervais (1985), which was answered by the teacher in the final month of the school year.

In this study we have used a questionnaire containing 48 items, in an ordinal scale of 3 points (0, 1 and 2; 0 indicates that the behaviour does not appear in the child, 1 that it appears sometimes, 2 that it is frequent). All of the items are grouped in 2 scales: Prosocial behaviour and Total inadaptation. The latter is also subdivided into 2 subscales: Agression-

TABLE 3

Behavioural categories and behavioural patterns considered

1. Affiliative: Social patterns promoting positive social relations	smiling/laughing; verbal interaction; asking for object; showing object; giving/receiving object; approaching.
2. Aggression: Patterns of threat and/or physical damage	arguing; threatening; restraining; attacking.
3. Submission: Non-aggressive answer to an aggression	crying; escaping.
4. Leadership: Patterns implying leading or to organising the other individuals' activity	leading/guiding; pointing; starting play; adjusting R's position; organising activities.
5. Follow partner: Patterns implying acceptance to be led by another subject	following (displacement activity, play), looking at (point).
6. Non-interactive play: SS. very near to each other (< 1m.) playing independently without social interactions.	
7. Interactive play: SS. engaged in a repeat play interaction.	
8. Rough-and-tumble play: S and R push and/or pull against each another (moving backwards, forwards, sideways, and downwards). Usually combined with various expressive behaviours (smile, laugh, etc.)	playful fighting.

hyperactivity and Anxiety-withdrawal which includes the items such as: working alone in the corner, being lonely or fearing new situations. Children with a percentile > 70th are considered as having high levels of withdrawal and risk of future social maladjustment by the authors of the questionnaire.

According to the idea that the different roles children play in their first peer groups are important in their socialisation, we approach a measure of social ability in pre-school children using two indices based on diversity of social contacts and behaviour (Braza et al., 1993). Applying Shanon's index ($H' = -\Sigma P_i l_n P_i$) as a measure of diversity, we calculated two indices of social ability:

(a) Index of Amplitude of Partnership (I.A.P.): in order to estimate the amplitude of partnership, we applied Shanon's index to the relative frequency of time that each individual spent with different companions; and

(b) Index of Amplitude of Behaviour (I.A.B.): with the relative frequency of time dedicated to the different social behaviours considered, we also used Shanon's index to calculate a measure of amplitude of behaviour.

Statistical analysis

The variables considered for each of the three investigated groups (biometrical measurements, family characteristics and social behaviour) were ordered by means of principal components analysis (P4M of the BMDP series, Dixon, 1985). Each individual's factor scores in the principal components of these analyses were recognised as new variables.

In this sense, the global analysis relevant for the research into relationships between the indices and the socialising agents, is obtained from a matrix of ten variables and 26 cases.

Data were transformed by using arcsine-square root transformations in the case of proportions or percentages (Martin and Bateson, 1986).

Results

Body measurements

Due to the small size of the sample, we reduced the number of variables and replaced them by the factor scores of the first axes of a prior analysis with varimax rotation.

A first factor was labelled 'Tallness' because it mainly groups the body measurements related to limb height and length. A second factor, 'Corpulence' includes the measurements related to this aspect of the individual, such as weight, abdominal contour, and waist size. A third factor mainly groups the variables reflecting the width of the head and face. Finally, a fourth factor groups measurements related to the length of the head and face.

Only the first two main components (Tallness and Corpulence) were considered as new variables.

Family characteristics

Family variables were reduced to three applying a prior factor analysis with varimax rotation. A variable (first axis) was labelled 'Family structure', because it groups variables

TABLE 4

Correlation matrix of new variables of body measurements, family characteristics, and social behaviours and both indices of amplitude. The apparent meaning of the components is indicated. The level of significance corresponding to 24 df are 0.388 for $P < 0.05$ and 0.496 for $P < 0.01$

	T	C	F ST	F SE	int	I.A.P.	I.A.B.	Ag	As	P
Tallness	1.000									
Corpulence	−0.099	1.000								
Family structure	0.032	0.097	1.000							
Family socio-economic status	0.279	0.201	−0.000	1.000						
Interbirth interval	0.015	**0.426**	0.000	0.000	1.000					
I.A.P.	−0.025	−0.341	−0.272	−0.188	0.129	1.000				
I.A.B.	−0.261	0.290	−0.064	−0.306	0.172	−0.250	1.000			
Agonism	**−0.392**	−0.117	0.217	−0.245	0.189	−0.067	0.361	1.000		
Assertiveness	0.314	0.252	0.164	0.045	−0.015	**−0.483**	**0.412**	0.019	1.000	
Prohierarchy	−0.320	0.170	**−0.439**	−0.217	0.092	−0.235	**0.438**	0.073	−0.019	1.000

TABLE 5

Rotated factor loadings of new variables

	Factor 1 Family heritage	Factor 2 Personal attitude	Factor 3 Family environment	Factor 4 Parental investment
Agonism	**0.762**	0.000	0.324	0.000
Tallness	**−0.702**	0.000	0.000	0.000
Family socio-economic status	**−0.670**	0.000	0.000	0.000
I.A.B.	**0.563**	**0.538**	−0.264	0.000
I.A.P.	0.000	**−0.841**	0.000	0.000
Assertiveness	0.000	**0.829**	0.000	0.000
Family structure	0.000	0.000	**0.843**	0.000
Prohierarchy	0.360	0.000	**−0.773**	0.000
Interbirth interval	0.000	0.000	0.000	**0.895**
Corpulence	0.000	0.370	0.000	**0.744**
Variance explained	**2.028**	**1.983**	**1.604**	**1.481**

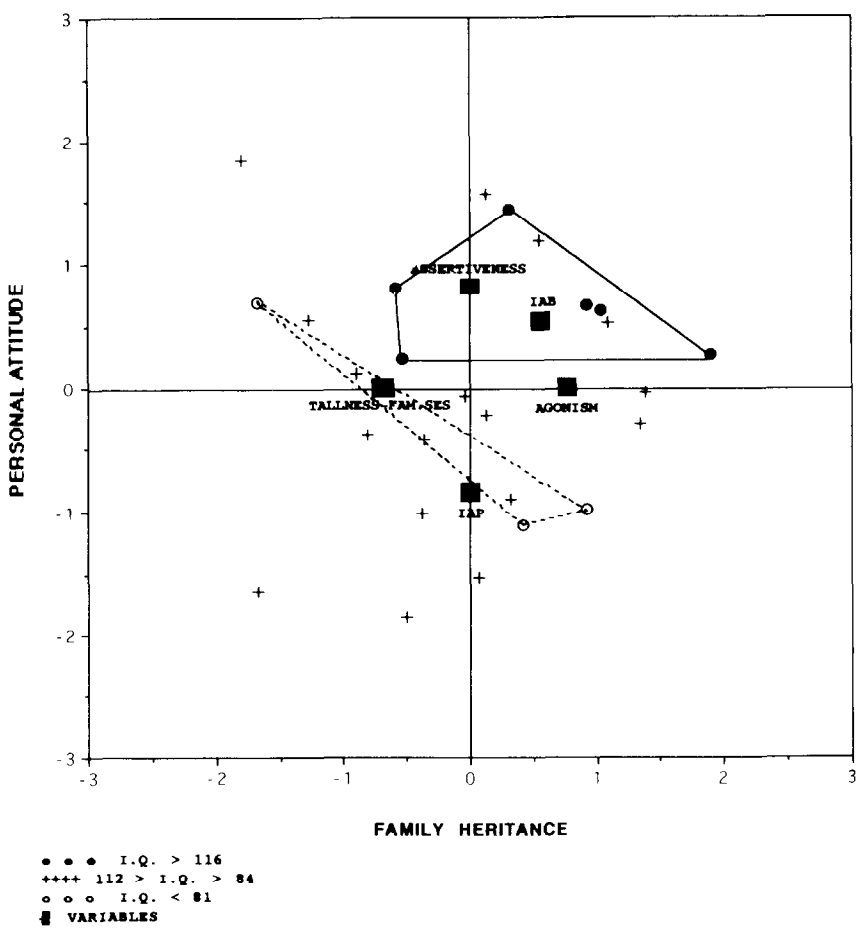

Fig. 1. Distribution of most and least intelligent individuals based on factors 1 and 2.

related to family size, sex, and age composition. The second factor, 'Socio-economic status' (SES), deals with the parents' education, family income, etc. Finally, the third factor 'Interbirth interval' informs us about the time dedicated by parents to rearing their chidren.

These three main components (family structure, socio-economic status and interbirth interval) were considered as new variables.

Social behaviour

We also reduced the social behaviour variables to three by means of a prior factor analysis. This factor analysis with varimax rotation on social patterns revealed a 4-factor (VP > 1) solution. On the first factor were Affiliative behaviour (in the positive zone) and Interactive play (in the negative zone); we labelled this factor 'Prosocial'. The second factor consisted of the items Aggression and Submission; this factor was labelled 'Agonism'. On

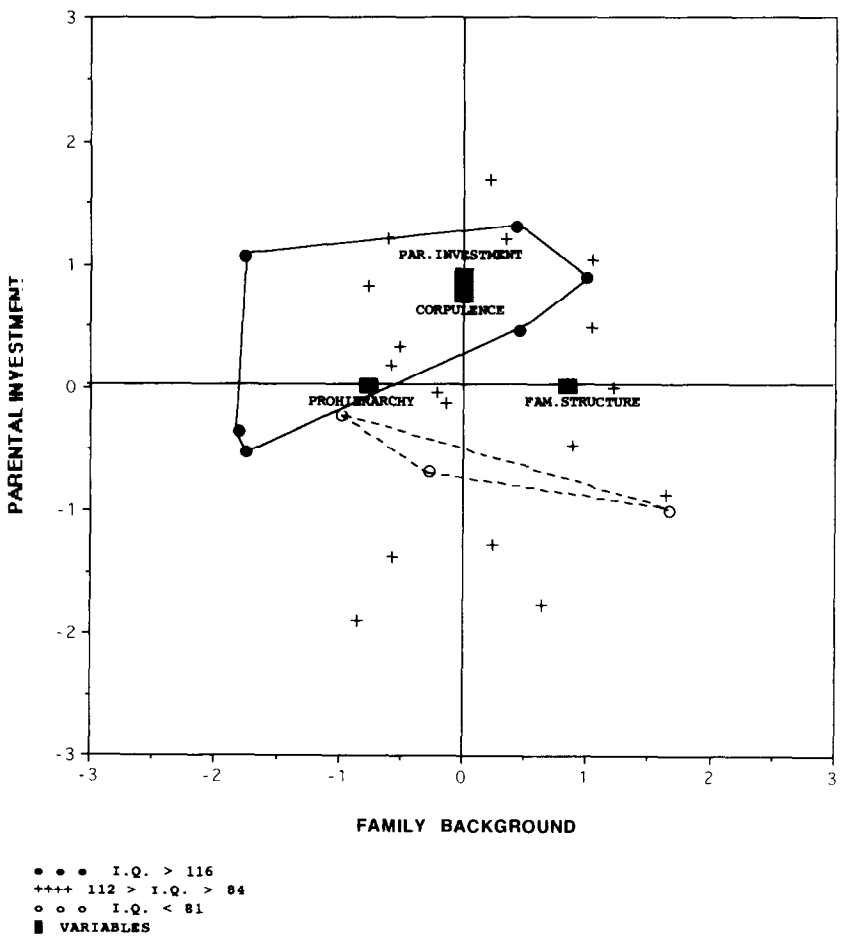

Fig. 2. Distribution of most and least intelligent individuals based on factors 3 and 4.

the third factor the items Leadership and Non-interactive play loaded significantly; we labelled it 'Assertiveness'. And the two items loaded on the final factor were Follow partner and Rough-and-tumble play; this factor was labelled 'Prohierarchy'.

We have taken as new variables only the second (Agonism), third (Assertiveness) and fourth (Prohierarchy) as main components, because the first axis seems to be an expression of the incompatibility between the Interactive play and Verbal communication.

Principal component analysis of the new variables

A factor analysis with varimax rotation on the eight new variables and the two considered indices of amplitude was undertaken. As indicates Table 4, the correlation

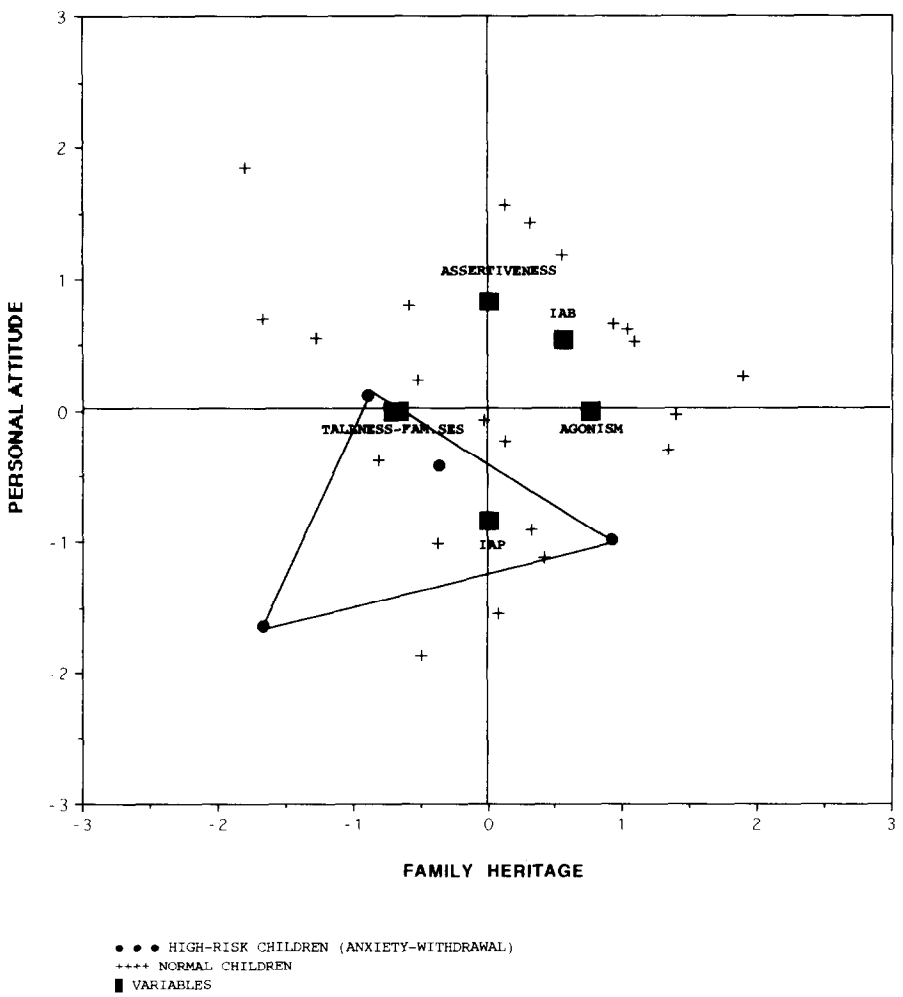

Fig. 3. Distribution of individuals rated as high-risk children (anxious-withdrawal) based on factors 1 and 2.

matrix shows only six cases to be statistically significant ($P < 0.05$). A high number of correlations has been computed. These correlations could be due to random effects. Nevertheless, the possibility of their correspondence to a real tendency should not be ruled out. The significant correlations found were as follows: I.A.P. appears inversely related to Assertiveness; and I.A.B. appears positively related to Assertiveness and to Prohierarchy. The latter, in turn, appears inversely related to Family Structure. Agonistic behaviour and Tallness are also inversely related; finally, Interbirth interval appears positively related to Corpulence.

This new factor analysis revealed a 4-factor (VP > 1) solution. On the first axis (Table 5), labelled 'Family heritage', we found that Agonism and I.A.B. occupied opposite positions to Tallness and SES. The second factor was labelled 'Personal attitude' because it mainly groups the Amplitude of Behaviour and Assertiveness (in the positive zone) and the I.A.P. in the negative zone. A third factor, labelled 'Family environment', includes Family

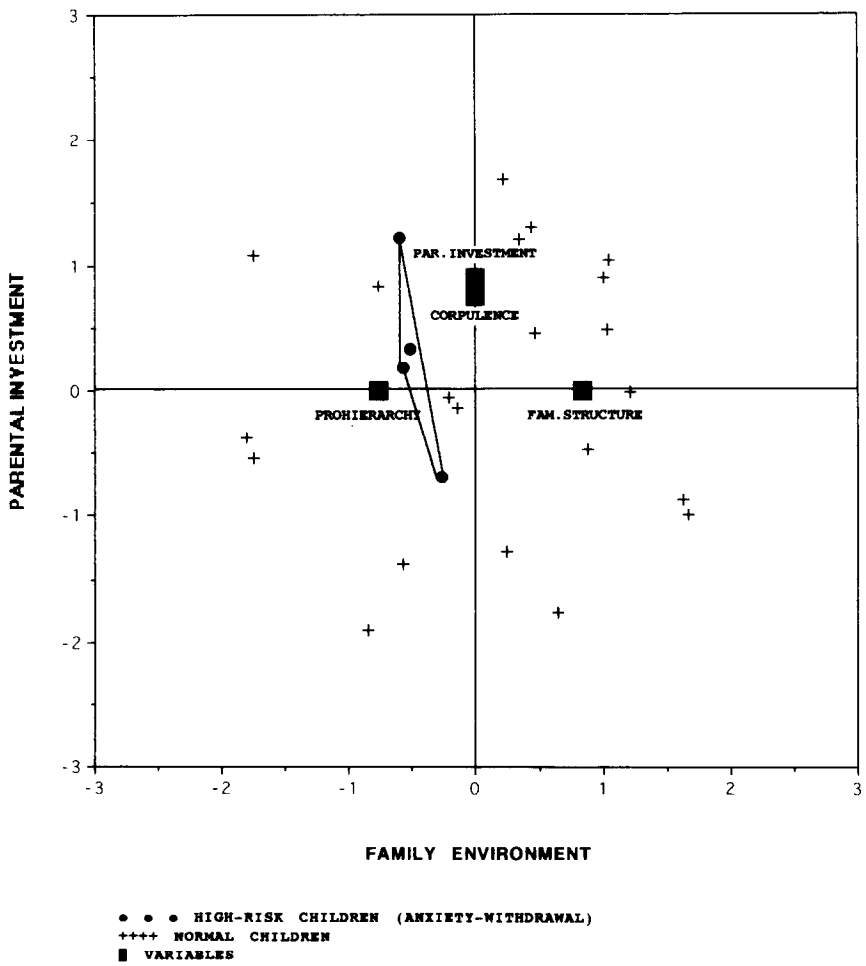

Fig. 4. Distribution of individuals rated as high-risk children (anxious-withdrawal) based on factors 3 and 4 (abdominal perimeter, measured at the height of the external borders of the iliacal crests).

structure in opposite position to Prohierarchy. And lastly, the items that loaded significantly on the fourth factor ('Parental investment') are Interbirth interval and Corpulence.

Finally, as an indication of the predictive validity of the indices of amplitude as measures of social ability, we considered the distribution of the individuals according to the factor scores obtained in this global analysis, and identified those subjects with an I.Q. superior or inferior to the mean values, as well as those considered by the teacher to have an anxiety level approaching social-risk.

As we can see in Figs. 1 and 2, children with a higher intelligence quotient (I.Q. $\bar{x} = 121.8$, S.D. = 8.9) are those who demonstrate a tendency to be more assertive and to test a larger variety of behaviours with a limited and stable number of partners, while those children whose scored lower on the intelligence test ($\bar{x} = 75.3$, S.D. = 9.8) seem to tend to relate to many partners, behaving in a more non-assertive manner and testing a lower number of behaviours.

Further, it also seems that the children with higher I.Q. scores are more corpulent and come from families with a higher level of parental investment.

Regarding social anxiety-withdrawal those individuals with a risk of future social maladjustement (percentile $\bar{x} = 91.8$, S.D. = 3.5) also showed a significant tendency to score high on the I.A.P., and low on the I.A.B. and Assertiveness (Figs. 3 and 4).

Discussion

Before discussing the results in a global manner, keeping in mind the exploratory character of our work, and taking into account the defects deriving from the small size of the sample, we will comment upon the preliminary analyses of each group of considered variables. In the first place, it is interesting to point out that the first two axes of corporal measurements seem to, in a certain way, adjust themselves to the psycho-physical types considered by Sheldon (1948) such as: (1) Ectomorpho (length of the body and limbs), and (2) Endomorpho (volume). A third axis seems to indicate the width of the face and the size to the nose, those characteristics which without a doubt are related to facial expression.

These results should be treated with caution since it is well known that the course of physical development can result in drastic changes in the corporal structure of the subjects (Michael Jr., 1990). Despite this, we suggest that it is important to keep these biometric characteristics in mind, since, as indicated by Weisfeld et al. (1987), physionomic features seem related to personality for some time before puberty.

Secondly, in terms of the family, the factors obtained seem to show three clearly differenciated dimensions: a first factor, related to size and structure of the family; a second factor, of a more socio-cultural character, which groups the relative variables according to the parents' cultural and economic level; and a third factor, Interbirth interval, with socio-biological connotations.

These dimensions could be indicating different types of family influence as socialising agent. In fact, we agree with Thomas (1990a) that that which affects the boys and girls is not any specific familiar factor, but rather a complex constellation of characteristics. Therefore, in order to estimate how an individual is affected by his/her family, the interaction of the various possible intervening factors must be considered.

Thirdly, a previous paper (Braza et al., 1993) has already discussed the contribution of behavioural factors to the indices of amplitude. As such, of the four obtained factors

(Prosocial; Agonism; Assertiveness; and Prohierarchy), the first grouped the time dedicated to affiliative activities and to interactive play in opposing zones, owing above all to the fact that they are mutually exclusive patterns.

This largely complicated the interpretation of the results. Furthermore, the contribution of both patterns of behaviour in both indices of amplitude were insignificant (multiple regression of I.A.P. with affiliative behaviour and interactive play: regression coefficients of 0.02 and 0.37 respectively; multiple regression of I.A.B. with affiliative behaviour and interactive play: regression coefficient of −0.20 and 0.14 respectively; n.s. in all cases; Braza et al., 1993). In this study, we have decided not to consider the Prosocial factor in the selection of the explored variables.

The second factor, which groups the patterns of aggression and submission, seems to indicate that the individuals can not be classified as exclusively aggressive or submissive, but rather as subjects with either a greater or lesser tendency to participate in agonistic situations.

This is not the case for the leaderships and follow-partner activities, which appear ordered in different axes and are therefore independent (factors 3 and 4). On the one hand, leadership is united with non-interactive play, which seems to suggest that the children with high marks on this axis are subjects with a high level of autonomy, capable of directing and organising activities: e.g. children with a certain degree of assertiveness. And on the other hand, the follow-partner activities appear on the same axis as Rough and tumble play, which indicates that those individuals who develop these types of activities are interested in participating in prohierarchical activities.

Among other functions, some authors attribute the possibility of learning rank to Rough/tumble play (Blurton Jones, 1967; Smith, 1982; Smith and Lewis, 1985). Though the activity of Rough/tumble play seems to appear almost exclusively in boys (Di Pietro, 1981), the fact that these four axes also include the activities of Follow-partner suggests that, although each sex may use different strategies, all are equally significant for the process of their socialisation.

Regarding to the global analysis of the new variables, the first factor reflects the 'Family heritage', the second informs about the 'Personal attitude', the third factor includes the 'Family environment' variables, and the fourth factor, difficult in interpretation, seems to be more related with 'Parental investment'.

At this level, we would like to emphasise the second factor, 'Personal attitude', which groups Assertiveness and both Indices of Amplitude, showing a relationship between the capacity to maintain stable relationships with a few peers (low I.A.P.) which permits the development of a greater number of different patterns of social behaviours (I.A.B.), and Assertivenesss.

Keeping in mind that Furman et al. (1979) have demonstrated that the experience gained through learning diverse strategies of social interactions fosters the development of assertive social behaviour and that other authors (La Frenière and Sroufe, 1985; Masten et al., 1985; Silva and Martorell, 1991) have demonstrated a positive relationship between social competence, socialisation and leadership, we believe that the amplitude of behaviour makes an important contribution to the social adaptation of each individual.

In any case, this factor would permit the evaluation of the personal capacity to acquire and develop effective social ability and to achieve successful socialisation. This feature seems to be characteristic of the individual, since no direct contribution can be detected on the part of either physionomic or familiar variables on this axis. There seems to exist solely a tendency among the more able children – as opposed to those who are less

intelligent – to score higher on this factor; recently, a significant correlation between intellectual ability and various measures of social adjustment has become clear; the more intelligent children tend to exhibit a considerably higher level of assertiveness and social maturity (Luthar and Zigler, 1992). Additionally, keeping in mind that, just as has been pointed out by Crittenden (1992), the pre-school children's flexibility in employing a wide range of behaviours using different strategies is representative of the behavioural complexity of individuals at later ages, we are able to confirm the consideration of I.A.B. not only as a useful tool for studying socialisation; but, also a possible predictor of social fitness.

In terms of the remaining factors, our results also indicate a relationship between I.A.B. and a high level of engagement in agonistic interactions among families with low SES and children of slight stature (both in the negative pole of the factor). Vaughn and Martino (1988) have already related agonistic activities to visual attention, which in turn reflects social competence.

In our sample, it also seems that children belonging to larger families of a more complex structure involve themselves less in prohierarchical activities, probably due to the fact that in these types of families, children have sufficient opportunities to learn social rank.

On the other hand, it seems that those families with a lower SES provide their children with an interest in agonistic relationships, which allows them to attempt a larger number of roles with their partners.

At this point, it is important to note that we are probably dealing with an equilibrium of aggressive-submissive relationships. Should this become unbalanced toward the exclusive pole of aggression, the literature demonstrates that this would certainly impede peer relationships, and could cause a certain margin of social risk among those individuals (Tremblay et al., 1985a,b).

In contrast, small-sized families, young parents, or a high index of parental investment seem to result in less risky processes, which permits a child to achieve a higher amplitude of behaviours through Assertiveness or through interest in Prohierarchical relationships.

The fourth factor obtained in this global analysis detects a reproductive strategy which is demonstrated by the relationship between interbirth intervals and parental care. Keeping in mind that in our study sample those children with superior I.Q.'s (who also tended to score higher on the I.A.B.) belong to families with high marks in this fourth factor, we can also assume that parental investment affects not only the allocation of resources; it can also contribute an improvement of social ability.

Finally, the fact that both those children evaluated by their teacher with risk of future maladjustment on the social anxiety-withdrawal scale and some 'undefined' children appear to be concentrated around the I.A.P. allows us to suggest that the I.A.P. could only hint at possible social risk until further studies have been undertaken.

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