

EVOLUTION OF RELATIONSHIPS AMONG MEMBERS OF A KINDERGARTEN GROUP

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Abstract: *The interpersonal relationships lie at the core of socio-emotional development, defined as the child's ability to form positive relationships, to cooperate, and to manage conflicts. Consequently, the analysis of social networks within the preschool group is essential for every child's integration into the group. In the present study, the sociometric technique is used to disclose the relationships among the members of a newly formed kindergarten group. Our research reveals that children's participation in an intervention programme, based on the use of strategies designed to enhance social and emotional skills, leads to closer interpersonal relationships among members of the group and to a higher group cohesion. These findings reinforce the idea that the kindergarten environment constitutes a potent educational space not only for cognitive acquisitions, but also for the formation of social skills.*

Key words: *preschool, sociometry, social and emotional abilities.*

1. Social and Emotional Abilities in Preschoolers

Interpersonal relationships constitute the foundation of socio-emotional development. The child's ability to form positive relationships, to cooperate and to manage conflicts influences emotional development, cognitive acquisitions, and subsequent success in educational environments. Consequently, the analysis of social networks within the preschool group is essential for identifying vulnerable children and stimulating their integration into the group (Ştefan & Kallay, 2010). At this stage, stable feelings appear gradually (guilt at 3 years old, pride at 4, and the prestige crisis around 6), supported by increased self-control and self-confidence. Children become more receptive, show increased resistance to frustration and reduce negative behaviours, while empathetic reactions become increasingly evident in interactions with others; the internalization of rules and norms of coexistence during the kindergarten years facilitates a higher level of emotional socialization (Glava & Glava, 2002; Ştefan & Kallay, 2010). Social skills are structured into two broad categories, each with the role of

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integrating the child into the group dynamics and developing their personal autonomy. First, the interpersonal skills include initiating games, cooperating, negotiating roles, communicating effectively, being able to offer or request help. Behaviours that indicate high levels of social skills include the child's ability to wait for their turn, be polite, manage conflicts in groups, express their intentions, and share toys. Second, the intrapersonal skills, describe abilities of self-regulation, self-control, and autonomy. By strengthening these skills, children develop a positive self-image and become able to function independently in relationships with others, maintaining a balance between personal and social needs (Vernon, 2006; Ştefan & Kallay, 2010).

Children's network of attractions (acceptance) and repulsions (rejection) can be systematically assessed as it is relatively stable over time: a longitudinal meta-analysis of the sociometric status in preschoolers showed that approximately half of children maintained the same status of accepted or rejected in the following year. Theoretical perspectives on socioemotional development in preschool emphasize that acceptance by peers is an indicator of underlying social competence, while rejection signals deficiencies in interpersonal skills. The accepted child status was associated with higher academic engagement, while the rejected child status predicted higher levels of problematic behaviours, including bullying and aggression. These findings highlight the essential role of early peer relationships, both as a vehicle for social learning and as a risk factor for later adjustment difficulties and the need for appropriate socio-emotional development programmes, even from such an early age (Cillessen & Bukowski, 2000).

The emotional competencies include three main dimensions: recognition of emotions, their regulation, and expression. Emotional awareness lies at the core of all the other affective skills and facilitates the anticipation of others' behaviours and the development of empathy. It involves defining and describing one's own emotions and those of others. Emotional regulation is the ability to tolerate frustration, manage internal conflicts, and use affective reactions according to specific situations. Effective emotional regulation helps children reduce disorganized behaviours, increase cognitive flexibility, and maintain positive interactions. The appropriate emotional expression refers to the use of verbal and nonverbal language to communicate affective states in a contextualized and socially accepted way. It supports the development of trusting relationships, providing the child with a tool for effective emotional negotiation (Vernon, 2006; Ştefan & Kallay, 2010). Emotional and social skills are closely interdependent: proper emotional management facilitates the initiation and maintenance of social relationships, which is particularly important in preschool, because forming friendships, integrating into a group and assuming a leadership role depend largely on how the child recognizes and responds to their own emotions and those of their peers. Simulated situations inspired by real life (e.g., playing firefighter or doctor) significantly improve children's emotional regulation, empathy, and cooperation while teaching them proper social interaction patterns (Wirahandayani et al., 2022).

2. The Sociometric Methodology

Sociometry is a systematic method for assessing the distribution of attraction and rejection within a group, usually by asking participants to nominate their most and least liked peers or to rate their level of agreeableness. The method was introduced by Jacob L. Moreno in 1934 (cit. in Olsen & Nielsen, 2009), as both a theoretical framework for understanding social groups and a set of empirical instruments for measuring interpersonal relationships. Child development researchers quickly adopted the technique, and its contemporary form has been strengthened by several key innovations: the shift from one-dimensional counts to two-dimensional models that capture both positive and negative nominations; the introduction of the concept of *social impact*, defined as the total number of nominations received, along with *social preference*, defined as the difference between positive and negative nominations as well as the identification of five sociometric categories—accepted, rejected, neglected, controversial, and average—derived from a child's position in the preference–impact space. The current standard procedure asks each child to nominate three peers they like most and three peers they like least. The nominations are then tallied, standardized within the reference group and integrated to generate continuous preference and impact scores and the sociometric status is assigned (Cillessen & Bukowski, 2000).

Sociometric testing may reveal hidden psychosocial structures, facilitating interventions aimed at improving group cohesion and team performance (Sopa et al., 2014; McMullen et al., 2014). A methodological review of sociometric techniques applied in inclusive education assessment showed that nominations and peer assessments consistently generated unfavourable results for students with special educational needs (Avramidis et al., 2016). The authors argued that reliance on a single sociometric instrument may lead to a limited perspective on social integration and advocated for the integration of sociometrics into multi-method designs, capable of capturing the complexity of peer networks.

The sociometric technique is a system that reveals emotional connections, and measures the degree of cohesion of the group, exposing signs of sympathy and antipathy among community members (rejected, leaders, stars) and positive, tense or even conflictual relationships and the cohesive intragroup formations (informal groups) as well as each group member's position in the field of interpersonal relationships and the overall psychological structure of the group (Olsen & Nielsen, 2009). The instruments used are the sociogram and the sociomatrix. The sociogram is a graphic figure using arrows that describes the type and meaning of the relationships between the group members. An arrow with a continuous line with a single direction shows unilateral preferences (A prefers B), one with a continuous line with double ends indicates mutual preferences (A prefers B and vice versa), an arrow with a discontinuous line with a single direction shows unilateral rejections and an arrow with a discontinuous line with a double direction indicates mutual rejections (Olsen & Nielsen, 2009).

The other sociometric instrument is the sociomatrix which describes the social area of preferential interpersonal relations established in the group (sympathy, antipathy, indifference). The options are recorded in a double-entry table, in which the members of

the group are noted vertically and horizontally, and the relationships between them with (+) and (–) and the points allotted to them.

The group cohesion index is calculated as the ratio between the *Number of mutual attractions* $\times 2$ and the *Number of participants* $- 1$ ($N-1$). Group cohesion expresses the degree to which the group is perceived as a single unit, its members sticking together and working towards a common goal. The index of preferential status is given by the ratio between the *Difference of the number of attractions and the number of rejections* and *Number of participants* $- 1$ ($N-1$). The index of sociometric status is calculated as the ration between the *Number of times one is chosen* and the *Number of participants* $- 1$ ($N-1$). The social status of the child in the peer group is one of the strongest predictors of later adaptation, being associated with emotional competences, self-regulation capacity, empathy and problem-solving skills.

3. Research Methodology

The specific objective of the present research was to assess the impact of a personal development programme on the social relationships among preschoolers. Our research wanted to answer the following questions: does participation in an intervention programme lead to changes in the interpersonal relationships between members of the group?

The research was conducted on a group of 25 preschoolers, 9 girls and 16 boys. Their age, at the beginning of the experiment, was between 4.9 and 6, with an average age of 5.59 years. All of them were in good health and 66.7% came from traditional families, one girl and one boy came from disorganized families, 5 girls and one boy came from divorced families, being raised by their mothers and grandmothers, and only one girl, raised by her father. Most of the children had siblings: 12 children had a brother or a sister, 4 children had 2 brothers/sisters each, and 9 children were only children.

The specificity of this group is that it was newly formed. The children had been in other 4 different groups in the previous school year. Because of administrative reasons as their colleagues from the previous year went to school and the number of remaining children was not enough to keep 4 different groups, these preschoolers were all assigned to this kindergarten group. One girl even came from a different kindergarten. Hence the need to create a physical and psychological space to foster children's development was identified by the teacher, who planned an intervention to prevent possible emotional and behavioural issues. The families were told about the aims of the research and their informed consent for their children's participation was obtained. A psycho-pedagogical experiment, in three stages, the initial, intermediate, and final ones, was designed. The independent variable was represented by the intervention programme delivered to the preschoolers across all educational activities, but mainly within the framework of an optional activity, *Me and You in the World of Friendship*. The dependent variable was the children's social position in the group.

The intervention programme consisted of a series of activities converging to the aim of developing children's social and emotional abilities so as to help them better adjust to the new conditions in their kindergarten group. The teachers implemented a Management Plan for children's behaviour in the group, establishing conduct rules to be

observed and making posters, such as "Voice Level" and "How do you resolve a conflict with another child?", to help children remember the rules. An optional activity, *Me and You in the World of Friendship*, was held weekly and offered an integrative theme across several curricular areas (counselling and guidance, language and communication, psychomotor activities, etc.). The objectives focused in children becoming aware of the uniqueness of one's own person, showing respect for the uniqueness of the other and, above all, creating a bridge between the *me* and *you* by learning prosocial behaviours.

We focused on the relationships between children seen from a bird's view in order to highlight the benefits of an intervention programme not only for the individuals, but also for the entire institution. We used the sociometric method to assess the degree of cohesion of the group and each child's index of preference in the initial and final phases of the experiment.

For this study, the questions were adapted to the preschoolers' cognitive level. During a Practical Abilities activity, they were given 4 sets of pictures of their colleagues and 4 handouts with an airplane with the task to choose pictures of 4 colleagues they wanted to go on a trip with, 4 colleagues they did not want to go on a trip with, 4 colleagues they thought they would chose them to go on a trip with, and 4 colleagues they thought they would not chose them to go on a trip with and glue them on the specific handouts. For this specific paper, only the data obtained from the first two questions were analysed. In the interpretation phase, points were awarded to the chosen children: 4 points were given to the first person chosen and then decreasingly down to one point for the last place. The rewarding system was similar for the rejected members, but the points were awarded from -4 to -1. The instruments we used are the sociogram and the sociomatrix. The group cohesion, the sociometric status and preferential status indexes were calculated. The sociograms were designed, placing the participants with the highest of times being chosen in the middle and the others, around them.

4. Results

The data from the initial phase, collected for the first question, "Who do you want to go on a trip with?", revealed 9 relationships of mutual attraction and 46 unilateral relationships while 8 participants had one rejection and only one preschooler did not register any rejection. The others had from 2 to 4 rejections (6 children had 2 rejections, 5 children had 3 rejections, 3 had 4 rejections) and two children could be described as the most rejected (with 6 negative places each). The cohesion index was calculated at 0.75, meaning a low cohesion which can be explained by the fact that the children came from different groups. From further analysis, 3 leaders and 3 subgroups emerged, corresponding to the children's former kindergarten groups. Two children were neglected, not showing connections to the others: a girl new to this kindergarten and a more withdrawn boy, coming from a divorced family with a history of aggressiveness, although they expressed their own preferences.

The most chosen children were a girl and two boys, coming from the same larger last year's group. The girl (participant 11) did not get any rejection and had the most attraction points (15), with the highest ISS and IPS, these showing her as the informal

leader of the group. The two boys (participants 20 and 21) chose each other, establishing a small centre of power in the group. The 4 mutual rejections belonged to children coming from previous different groups and the other unequivocal rejections came from the other groups. One of the boys who was never chosen (participant 16) was rejected 5 times (10 rejection points) and he, along with the boy (participant 14) with the highest number of rejections (6) and the highest rejection points (11) became the rejected members of the group and at the same time one of the focal points of the teachers for the intervention programme.

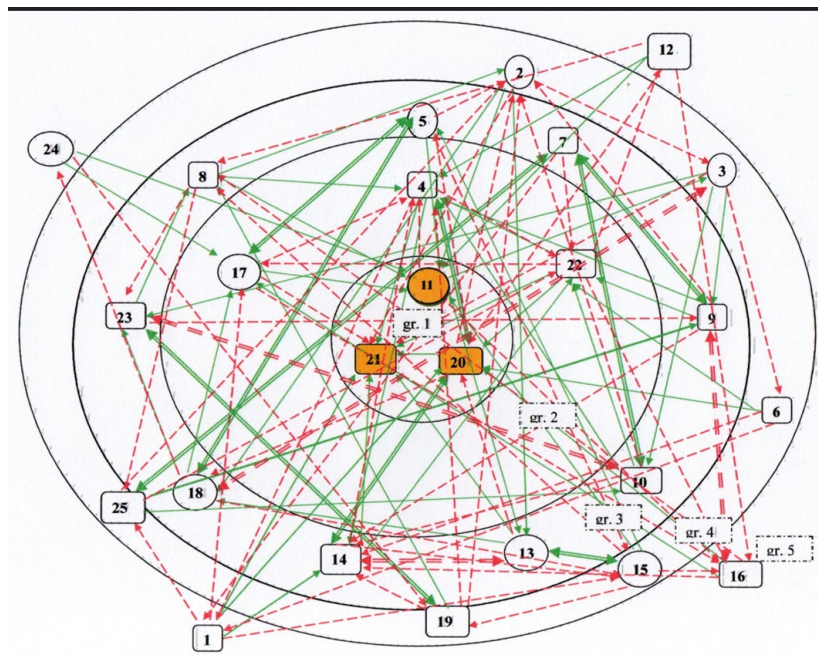


Fig. 1. *The sociogram from the pre-test phase*

Overall, we noticed that four children were never chosen and six children registered just one rejection. Most rejections came from children from different previous groups or with a history of conflict. Preschoolers' preferences were limited to 1–2 peers and they had difficulties in anticipating reciprocity. The high number of rejections in the initial phase reflects a low level of social tolerance and a more pronounced competition for relational resources (adult attention, play roles, toys, etc.). This situation frequently occurs in recently mixed collectives, where the social norms are not yet internalized.

The level of acceptance in the group, measured through the Index of Social Status (ISS), showed that nobody had a high ISS (above 0.33), not even the absolute leader of the group, who had an ISS of 0.29. Four children had an average ISS and the rest of them had a low ISS (under 0.21).

This analysis of the data obtained in the pre-test phase of the experiment offered a clearer image of the emotional charge of the group. The beginning of the new school year was difficult for the children as they were the ones left behind by their former

colleagues who went on to school. They were too young to start school or not mature enough to do so, therefore they had to spend one more year in kindergarten, in a new class formed by them. Also, they had a new teacher, which made adaptation even more challenging. The animosities or lack of relationships among these preschoolers can be explained by these administrative changes. Hence came the need for an intervention programme for the development of their social and emotional abilities in order to better integrate into the class.

After the initial assessment stage, held in September, at the beginning of the school year, the intervention programme was delivered and the final assessment phase took place in May, close to the end of the school year.

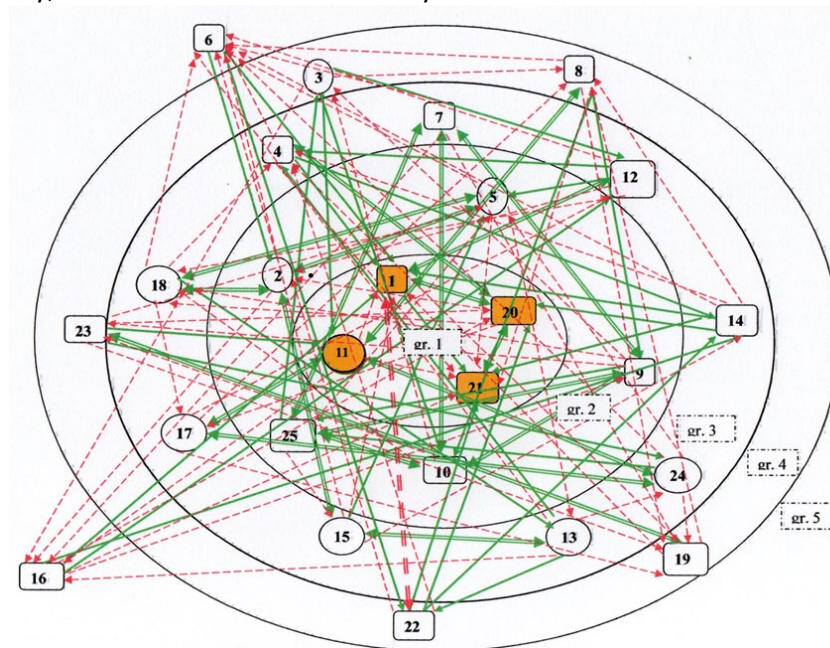


Fig. 2. *The sociogram from the post-test phase*

In the final assessment phase, the sociogram indicated 18 mutual attractions and 33 unilateral attraction relationships, while 4 children were not rejected at all, 6 had one rejection, 8 had 2 rejections, 2 had 4 rejections, 3 children had 5 rejections, and one child had 6 rejections. One child emerged as most rejected, with 12 rejections. The preschoolers' perceptions of who liked them revealed 14 mutual attractions and 41 unilateral relationships; 7 children were seen as not rejecting anyone and 7, as rejecting only one colleague, 2 rejections were perceived from one child, 3 rejections from 4 children, 4 rejections from 2 children, 5 rejections from one child, 7 rejections from 2 children, and 8 rejections from one child.

If in the initial evaluation, we had three leading subjects, respectively four subjects outside the group, in the final assessment, we noticed that there were four children sharing the highest numbers of attractions (5 and 6 attractions). The former leaders (participants 11, 20 and 21) had fewer points and only participants 11 and 21 were still

in this group, while participant 20 was now an average member of the group, but with the same number of attractions and rejections. The most surprising score was obtained by participant 1 who rose from having not being chosen at all to becoming a leader, with most attractions (6). However, in terms of attraction points he has 11, on the second place after participants 11 and 20. These results highlight the importance of the activities proposed by the teachers for the development of preschoolers' social and emotional abilities and towards forming a small community. We noticed a more balanced distribution of popularity, with more children having higher scores (starting with 4), but not as high as in the initial evaluation and a decrease in the number of subjects not chosen at all, from four to two. There are 18 mutual attraction relationships and 33 unilateral relationships, underscoring the doubling of the mutual attractions since September. These findings may suggest a decrease in social competition and an increase in inclusion, the integration into the newly formed group being visible.

One boy (participant 6) emerged as the marginalized member, with 12 rejections (and no attractions, although he had one in September), probably caused by his general aggressive behaviour towards his peers. Also, in the initial stage he was frequently absent, a reason that may explain the lack of attractions/rejections then, as the children did not know him very well. Another child (participant 16), with a conflictive family history, also had only rejections. In the case of these two boys, the intervention programme had little effect, possibly because any educational activity should be supported by the family and in these situations that was not the case. The teacher's attention should focus on

As concerning the rejection dynamics, compared to September, the mutual rejections decreased from 4 to 1 at the end of the school year, signalling the strengthening of compliance to group norms and the internalization of cooperation rules. There were also 4 children (one girl and 3 boys) not rejected by anybody, but only two were the same (participants 7 and 11). Two boys (participants 21 and 22) had the same number of attractions and rejections. These variations are natural and they are characteristic of a group that matures, with preschoolers being more able to show empathy and tolerance and manage their emotions. After the intervention, there was a clear transition from the parallel subgroups to a denser and more connected social network. Children reduced their differences, increased their compatibility, and the initially selective relationships became more flexible. The transformation of participant 1 from marginal child (ISS=0) to leader draws attention to the critical role of constant participation in educational activities, the value of exposure to acceptable norms as well as the plasticity of social status in preschool. The cohesion index is 1.5, almost double the index from the initial phase. Although we had predicted an increase in the scores obtained at the ISS, which shows the level of acceptance in the group, nobody had a high ISS (above 0.33), not even the new leader of the group, who had an ISS of 0.25. Three children had an average ISS and the rest of them had a low ISS (under 0.21).

5. Conclusions

The information provided by the sociometric test is very important for the educators. Based on it, they can manage the relations among the members of a group, explain the latent or manifested tensions between them, and convert negative relations into positive ones. A personal development programme, delivered throughout an entire school year, leads to the improvement of interpersonal relationships for its participants as an outcome of the development of their social and emotional abilities. The main gains of this intervention are shown by the increase in the number of preferred peers and the decrease of the rejected ones. Overall, group cohesion increased, and positive interactions became more frequent and more balanced. Therefore, we can say that the aim of this research was reached. The research question regarding the effects of the participation in an intervention programme was also answered. First of all, it changed the types of relationships among preschoolers. They changed their leaders, offered positive reactions to more peers (as a group). An increase in ISS was noted for 11 children and a decrease in ISS was noted for 10 of the children while 4 kept the same standing, which indicates that although there were changes in the group dynamics, they were not all positive. Getting to know each other better, preschoolers probably placed their choices being more aware of their peers' traits.

Preschoolers with many attractions perform essential functions in the group: setting the tone of interactions, mediating conflicts and facilitating collaborative play. In the case of this study, the fact that leaders remained relatively stable over time indicated the existence of a core of social centrality, a common feature in groups of preschool children. Interestingly, a new leader (participant 1) has emerged, a child who in the initial stage had neither attractions nor rejections. This change highlights the social plasticity characteristic of preschool: through constant participation, exposure to interactions and social learning, children can evolve rapidly in the network.

As concerning the index of preferential status, most children (13) retained their positive status from the initial evaluation while 4 of them kept their negative IPS. Some children (4) turned from positive to negative and the same number (4) from negative to positive. These fluctuations also highlight the idea that children developed their socio-emotional abilities and they were able to make different choices, more in agreement with their present capacities. The index of preferential status took the following range of interpretation: a high IPS for scores between $0.33 \rightarrow 1.00$, a neutral score between $-0.32 \rightarrow +0.32$, and low IPS for scores below -0.31 . In the initial evaluation, all children had medium scores, while in the final assessment, most children kept this status, except one, who had a low score for IPS (-0.5). Of course, he was the most rejected child of the group. It seems that the entire class excluded this boy (whose behaviour was a constant issue during the school year). The same scores may indicate that children who are withdrawn or have conflicting family experiences remain vulnerable to social isolation, in spite of educational interventions. Aggressive children are rejected regardless of the socio-structural network, confirming the literature on the prosocial preferences of young children. This also emphasizes the fact that the preschoolers had developed common values, which is a qualitative support for the increase in the degree of group cohesion, from an index of 0.83 in the initial assessment to 1.5 in the final assessment. We noticed a significant evolution of social relations: from a fragmented structure

marked by multiple rejections, the group reached a higher cohesion, increased the number of leaders and decreased the number of rejected children. Consistent with previous sociometric research (Cillessen & Bukowski, 2000), the present study shows that preschoolers' socioemotional development is a dynamic process, anchored in peer-mediated experiences, in which early patterns of acceptance, rejection, and social impact shape later trajectories of social competence, behavioural adjustment, and academic performance.

This research provides support for intervention programmes designed to enhance social and emotional development in preschoolers. Social relationships in preschool are extremely dynamic and sensitive to the educational climate. Groups tend to naturally evolve towards cohesion when the pedagogical environment is predictable and fosters empathy and cooperation. Of course, teachers should be trained in this direction so that they understand the need for high-level soft skills for future members of society. These findings reinforce the idea that the kindergarten environment constitutes a potent educational space not only for cognitive acquisitions, but also for the formation of social personality.

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