Children's Play Profiles: Contributions from Child's Temperament and Father's Parenting Styles in a Portuguese Sample

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LM, CS: conception of the work and acquisition of data. CS, OR: data analysis. LM, CS, OR, BV: interpretation of data, drafting the manuscript, final approval of the version to be published, agreement to be accountable for all aspects of the work.

Keywords

Play, Social behaviors, Non-social behaviors, Temperament, Father, Pre-school

Abstract

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Using a sample of Portuguese pre-school age children, we aimed to identify different play profiles based on teachers' descriptions of social and non-social behaviors; as well as characterize them in terms of children's characteristics (sex and temperament), and fathers' parenting styles (e.g. warmth and involvement or punitive strategies). The 243 children were distributed across four profiles (identified through a two-stage cluster analysis): Solitary/Reticent, Social Rough, Social, and Social Solitary. A univariate effect was found between play profiles and children's Effortful Control, as well as father's Punitive Strategies. In addition, a significant multivariate interaction was found between child's sex and the Solitary/Reticent and Social Rough profiles for father's Punitive Strategies. In this sample children in social play profiles seem to use diverse types of behaviors during their interactions with peers and being adjusted within the group. As children's early experiences with peers are a central context for a healthy development, a better understating of the diversity of play profiles, and its predictors is important for early interventions.

Contribution to the field

Due to the relevance of play as a central context for peer interactions this study aimed to better understand how Portuguese pre-school age children use diverse play behaviors. Analyzing these behaviors with a clear taxonomy allows for more than just an accurate description, it is the starting point to understand factors explaining children's success or difficulties in this domain. Following Rubin and colleagues' model suggesting the transactions between biological and socialization experiences in explaining these behaviors, we assessed how the play profiles differed in terms of child's temperament and father's parenting. A multi-method and multi-informant approach was used. Children's play behaviors were described by their teachers, an important source of information, since in today's societies children spend a large number of hours in school settings, and this is particularly true in Portugal. Our results contribute to a more diverse characterization of children's social play behaviors, and the importance to identify early difficulties to sustain informed interventions. Finally, a central contribution was looking at fathers, including them in child developmental research. While there is a growing interest in fathers' contributions, the number of studies is still scarce.

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Children's Play Profiles: Contributions from Child's Temperament and Father's Parenting Styles in a Portuguese Sample.

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Abstract

Using a sample of Portuguese pre-school age children, we aimed to identify different play profiles based on teachers' descriptions of social and non-social behaviors; as well as characterize them in terms of children's characteristics (sex and temperament), and fathers' parenting styles (e.g. warmth and involvement or punitive strategies). The 243 children were distributed across four profiles (identified through a two-stage cluster analysis): Solitary/Reticent, Social Rough, Social, and Social Solitary. A univariate effect was found between play profiles and children's Effortful Control, as well as father's Punitive Strategies. In addition, a significant multivariate interaction was found between child's sex and the Solitary/Reticent and Social Rough profiles for father's Punitive Strategies. In this sample children in social play profiles seem to use diverse types of behaviors during their interactions with peers and being adjusted within the group. As children's early experiences with peers are a central context for a healthy development, a better understating of the diversity of play profiles, and its predictors is important for early interventions.

1 Introduction

In the field of human development there is consensus that peer interactions provide unique and essential opportunities for children's socio-emotional, cognitive and behavioral development (Coplan and Arbeu, 2009). In the context of these interactions, opportunities emerge, not only for practicing existing skills required to attain personal goals within the social context, but also for acquiring new ones (e.g., Vaughn et al., 2016). Additionally, they provide a context for the co-construction of social relationships with a strong impact on individual's well-being later in life (Rubin, et al., 2009).

In societies where young children are enrolled for several hours a day in child-care centers, the peer group becomes an even more important context. In Portugal, according to Organization for Economic Co-operation and Development (2019), 92% of children between the ages of 3 and 5 are enrolled in pre-school (higher than the average for the OECD – 87% and EU – 90%). These pre-school experiences increase children's opportunities to interact with peers as potential play companions and possibly benefit from these interactions. For some children such experiences may represent increase challenges, if they lack skills to initiate and maintain positive exchanges with peers

(Coplan et al., 2015). The cumulative effects of these sub-optimal peer experiences may put these children at risk for later psychosocial maladjustment (e.g., Vaughn et al., 2016). Thus, it is important to be able to identify and characterize groups of children with similar social or non-social play behaviors, so early social difficulties can be distinguished, and preventive strategies can be implemented to avoid the onset of less healthy developmental trajectories.

Although peer interactions may occur during other group activities, play seems to be a more frequent context where these interactions take place. During the pre-school years play becomes more salient and progressively more socially sophisticated, with the expansion of children's social network, and cognitive and emotional abilities (Coplan and Arbeu, 2009). Social play is grounded in children's abilities to initiate and engage with peers in a shared activity, using skills such as cooperation, imaginary play, and turn-taking (e.g., Coplan et al., 2015). During these transactions, children participate in social episodes in which their actions are both responses to other's behaviors and constitute new stimuli that may elicit a response from the partner (Coplan et al., 2015; Rubin et al., 2006). The quality of these playful interactions has impact on children's levels of acceptance by their peers and how they develop friendships (e.g., Vaughn et al., 2000).

For several decades, researchers have tried to describe and understand why some children find peer interactions challenging, but the literature has been characterized by inconsistencies. Rubin and colleagues (Coplan and Rubin 1998b; Coplan et al., 1994; Rubin and Asendorpf, 1993; Rubin, 2001; Rubin et al., 2009) have made major contributions to the field by using a consistent and empirically based taxonomy of non-social behaviors. Non-social play behaviors tend to be described as the consistent display (over time and different contexts) of solitary activity and/or behaviors while in the presence of potential play partners that neither initiate nor maintain a social transaction (e.g., Coplan et al., 2015). A variety of non-social behaviors have been described that may reflect different motivational mechanisms: Reticent behavior includes a cluster of solitary acts such as continuous onlooking towards a potential play partner without attempting to join in; or being unoccupied while at a distance from peers. These children seem to want to engage in play with their peers but are anxious and afraid to do so, leading them to avoid interaction. Solitary-Passive behaviors involve constructive play and object exploration while playing alone (e.g., playing with building blocks). These children tend to not approach their peers during play, but while seemingly disinterested in engaging with them they do not avoid/reject them if approached. Solitary-Active Play behaviors refer to the display of functional play in the form of recurrent sensory-motor activities with or without objects, or solitary dramatic/pretense play, in the presence of peers (e.g., Coplan et al., 1994; Coplan and Rubin, 1998a).

Due to the centrality of play for children's early development, researchers have tried to understand environmental and genetic precursors of children's play quality (e.g., Cheah et al., 2001). Typically, the focus has been on individual characteristics such as age, sex and temperament, and less on contextual and dyadic variables such as parenting beliefs/strategies, and parent-child interactions. To disentangle the complexity and diversity of this phenomenon Rubin and Mills (1991) have proposed a model emphasizing transactions between child's individual characteristics and parenting practices as precursors of children's social/non-social play. For example, a child with an inhibited temperament, may react anxiously to new and challenging situations, and evoke responses such as excessive control or intrusiveness from parents. These parenting behaviors have been linked to reticence and social withdrawal (Hastings et al., 2010). However, this research has been focused mainly on mothers, while the role of fathers has been understudied across development (Cabrera et al., 2018).

Following Rothbart and Ahadi's (1994) psychobiological approach children's temperament is centered on individual differences in the way they react to the world, and how they regulate behaviors and emotions. Since navigating the world requires reacting, regulation and behaving accordingly, children's ability to self-regulate, and their reactivity to other stimulus affects the quality

of their playful transactions with adults and peers (Slot et al., 2017). Studies have shown that children with fearful or anxious temperamental traits are more behaviorally inhibited and tend to engage in nonsocial play (e.g., Fox and Calkins, 1993), to disengage from peers and to withdraw from social interactions (Buhs and Ladd, 2001). Moreover, reticent behaviors observed in the context of play have been associated with temperamental shyness and fearfulness (Henderson et al., 2004). The existing literature does not tend to report sex differences in terms of prevalence of social and non-social play behaviors (see Rubin et al., 2009 for a review). Nonetheless, the consequences of non-social behaviors seem to be different for boys *vs.* girls due to social gender bias, e.g., in Doey et al. (2013) non-systematic review, several studies suggested that shy, withdrawn behaviors of boys are associated with more negative responses by peers, parents, and teachers.

Typically, parents are children's first social partners and caregivers, with the quality of parental care and the experiences co-constructed within these relationships being cornerstones for the way children adapt and organize their expectations, behaviors and emotions in present and future social experiences outside the family (e.g., Sroufe et al., 2005). The literature often describes differences in the ways mothers and fathers interact with their children and suggests that fathers play more than they are involved in care (e.g., Monteiro et al., 2017b), and that their play is more active and physical, in comparison to mothers. Moreover, fathers are described as encouraging more their children to explore, take risks, and push limits (e.g., Fletcher et al., 2012; Lamb and Lewis, 2011). In terms of parenting styles and practices, fathers tend to identify themselves as more authoritarian than their spouses (Winsler et al., 2005), and recurring to more authoritarian practices (Russell et al., 2003), especially if they had sons. In Portuguese samples, fathers tend to report being more authoritative than authoritarian (e.g., Monteiro et al., 2017b; Pedro et al., 2015), although when compared to mothers they report lower levels of the authoritative style (Pedro et al., 2015).

This study is focused on fathers, since there is less information (as in other domains) about their impact on children's social and non-social play. A few empirical studies have supported the association between the development of children's shyness and fathers' parenting behaviors (Hastings et al., 2010). For instance, fathers' critical and non-supportive parenting styles were associated with teacher-reports of elevated anxiety and isolation in preschool age children (McShane and Hastings, 2009). On the contrary, even when controlling for effects of race, ethnicity and socioeconomic status, fathers' sensitive and supportive behaviors are associated with children's positive outcomes (e.g., Cabrera et al., 2018 for review). Parke (1995) reports that when both mother and father are involved, fathers might be as important as mothers for the development of children's abilities to positively interact and play with their peers.

1.1 The Current Study

Using Rubin and Mills' (1991) model as a framework, the aim of this study was to identify distinct profiles of children with similar patterns of play-behaviors using a person-centered approach. This approach does not presume that a single model should fit an entire population or sample, rather, suggests that multiple, relatively homogeneous subgroups may be found in a given sample or population, but that classification categories cannot be determined a priori (Howard and Hoffman, 2017). Next, we intended to characterize children's play-profiles (controlling for age) in relation to child's sex and temperamental characteristics (extroversion, effortful control and negative affectivity), and father's parenting styles (e.g., warmth and involvement or corporal punishment), in a developmental period described by researchers (e.g., Lamb & Lewis, 2010) as particularly salient for father-child interactions, since children become more physically, cognitively, emotionally and socially competent, facilitating father's involvement.

2 Methods

2.1 Participants

Two-hundred and forty-three children, their mothers and fathers, as well as children's preschool teachers participated in the study. Children were between 36 and 72 months old (M = 53.60, SD = 11.50), 121 were girls, and 150 had siblings. Father's age ranged between 24 and 56 years (M = 38.08, SD = 4.91), with 52% of the fathers having primary to high school education and 48% a University degree; 95% worked full time. Mothers age ranged between 24 and 47 years (M = 36.13, SD = 4.37), with 34.5% having primary to high school education and 65.4% a University degree; 90% worked full-time. Families were within the middle-class range according to Portuguese standards. Sixty-two pre-school teachers with an average of 40.57 years of age (SD = 8.34), all with a University degree in Early Education also participated.

2.2 Procedures/Instruments

This study is part of a larger project aiming to study the impact of father's involvement in children's socio-emotional development during the first years. Parents and teachers were informed of the main objectives of the project and signed an informed consent prior to any data collection. Mothers completed the sociodemographic and the child's temperament questionnaires; fathers completed the parenting styles questionnaire for the target child participating in the project. Each pre-school teacher reported typical play behavior of, on average, four children in their classroom. The classrooms were organized by child's age, with 15 to 20 children in the group.

The Preschool Play Behavior Scale (Coplan and Rubin, 1998b) is an 18-item questionnaire with 5 dimensions describing children's behaviors during free play, in the presence of their peers. It aims to differentiate social play and different types of non-social behaviors (reticent, solitary-passive, solitary-active and rough). The validated Portuguese version (Monteiro et al., 2017a) maintained, through a confirmatory factor analysis, the 5 dimensions model, retaining 14 of the original items: Reticent Behavior refers to behaviors characteristic of children who observe their peers without participating (e.g., "wanders by the classroom without any purpose"); Solitary-Passive describes exploratory and constructive behaviors without social engagement (e.g., "plays alone, exploring toys or objects, trying to figure out how they work"); Solitary-Active describes dramatic solitary play (e.g., "plays make-believe, but alone"); Social Play includes peer playing and active participation in constructive peer interactions (e.g., "talks with other children while playing"); and Rough Play, referring to physical play and play fighting (e.g., "engages in simulated and enjoyable/fun fights with other children"). Pre-school teachers answered on a 5-point scale (1 - Never, 3 - Sometimes, 5 - Always). Cronbach's Alpha analysis revealed acceptable levels for all dimensions: Reticent (α = .76), Solitary-Passive (α = .72); Solitary-Active (α = .73), Social (α = .89), Rough Play (α = .94)

The Children's Behavior Questionnaire – Short Form Version (Franklin et al., 2003; Putnam and Rothbart, 2006) assesses the child's temperament as the constitutionally based individual differences in reactivity and self-regulation, influenced over time by heredity and experience (e.g., Rothbart and Ahadi, 1994). In the Portuguese version (Lopes, 2011) 73 items were retained (of the 94 original) and organized in the 15 scales fitting Rothbart's three dimension model: Extroversion referring to high activity levels, impulsivity, and sociability (e.g., "likes to slide down or do other adventurous activities"); Effortful Control referring to the ability to plan adequate responses/suppress inappropriate responses (e.g., "can wait for new activities when asked to wait"); and Negative Affectivity, referring to the expression of feelings of fear, sadness, and anger (e.g., "throws tantrums when doesn't get what he/she wants"). Mothers answered on a 7-point Likert-like Scale (1 - "extremely untrue of your child"; 3 - "slightly untrue of your child"; 7 - "extremely true of your child). All dimensions reached acceptable Cronbach's Alpha levels Extroversion (α = .82), Effortful Control (α = .82), Negative Affectivity (α = .73).

The *Parenting Styles and Dimensions Questionnaire – Short Version* (Robinson et al., 2001), validated for Portuguese samples by Pedro et al. (2015) maintained the 32 items that can be organized in terms of parenting styles and dimensions. For the purpose of this study only the dimensions and practices were used: Corporal Punishment, Punitive Strategies, and Verbal Hostility, characterized with high restrictiveness and low responsiveness (e.g., "uses threats as punishment with little or no justification"); and Warmth and Involvement, Reasoning/Induction, and Democratic Participation, associated with high responsiveness and high demandingness (e.g., "explains the consequences of child's behavior"). Father's reported on a 5-point Likert scale (1- Never; 3 - About Half of the Time, 5 - Always). The Cronbach's Alphas for Corporal Punishment (.67), Punitive Strategies (.70), Warmth and Involvement (.65), Reasoning/Induction (.65), Democratic Participation (.70) were all acceptable, with the exception of Verbal Hostility (.52), which was not considered for further analysis.

3 Play of Analysis

A cluster analysis was conducted to identify children's play behavior profiles conducted in a two-stage grouping procedure (Hair and Black, 2000). A Hierarchical Cluster Analysis was performed using Eucladian distances for the initial observations, using the Ward method to identify the clusters. Then, a non-hierarchical method of clustering cases (k-means) was used to optimize the subject's distribution in each cluster. In order to analyze the differences between profiles, considering the play behaviors, a multivariate analysis of variance (MANOVA) was used, and in case of significant effects, a post-hoc (Tukey) test. Third, a multivariate analysis of covariance (MANCOVAs) was performed to test possible differences in the established play profiles in terms of child's Temperament and Parenting dimensions, considering child's sex and using age as a covariate. Pillai's Trace criterion (V) was selected as the multivariate test to assess the statistical significance of the group effect, due to its robustness with unequal sample sizes (Tabachnick and Fidell, 2007). When significant multivariate effects were identified, subsequent univariate analyses of covariance (ANCOVAs) were computed, followed by pairwise comparisons with Bonferroni corrections.

4 Results

In order to identify children with similar play behaviors, a Cluster Analysis was conducted, with a Hierarchical Cluster Analysis using Eucladian distances, and a parsimony assessment of the agglomeration coefficients and the dendrogram, revealing a four-cluster solution (R^2 = 51.05%). Followed by a K-Means Cluster analysis, to enhance subject's distribution, with the final four-cluster solution (R^2 = 53.18%): Solitary/Reticent (n = 33, 13.69% of the sample); Social Rough (n = 77, 31.95%); Social (n = 60, 24.90%) and Social Solitary (n = 71, 29.46%). Figure 1 shows the means of Play Behaviors for each Play Profile.

--- Insert Figure 1 ---

To better understand the Play Profiles, differences between the four profiles regarding the five categories of play behaviors were analyzed with an MANOVA and post-hoc tests (Tukey), a significant multivariate effect (V = 1.70, $F(15, 711) = 61.92$, $p < .00$, $\pi = .57$) and consequent significant univariate effects for all play behaviors were found. The results are presented in Table 1. These results confirm that the constituted groups include children with statistically different profiles regarding the dimensions of social and non-social play behavior. The Solitary/Reticent Profile has significantly lower scores of social play and significantly higher scores of reticent behaviors than the remaining three profiles. The three Social profiles do not show significant differences between them in terms of social play, but we could identify significant differences in specific types of behaviors. For example, the Social Rough Profile shows significantly higher scores of rough play, and the Social Solitary Profile displays significantly higher scores of solitary-passive and active behaviors.

--- Insert Table 1 ---

A MANCOVA was used to assess differences in Play Profiles in terms of Child's Temperament and Father's Parenting dimensions, considering children's sex and using age as a covariable. After controlling for children' age, a significant multivariate effect was found between the Play Profiles, the dimensions of children' temperament, and the fathers' parenting dimensions (V = .18, F(24, 681) = 1.81, p = .01, = .06, π = .99). The results are presented in Table 2. Regarding *children' temperament*, a univariate effect between the Play Profiles and Effortful Control (F(3, 232) = 4.48, p = .004, η_p^2 = .06) was found. Pairwise comparisons with Bonferroni corrections showed that children in the Solitary/Reticent and Social Rough Profiles have significantly lower scores on Effortful Control when compared to children with a Social Profile. While for *father's parenting,* a significant univariate effect was found between play profiles and father's Punitive Strategies (F(3, 232) = 4.66, p = .003, η_p^2 = .06). Pairwise comparisons with Bonferroni corrections showed that children in the Social Rough profile have fathers whose parenting is characterized with statistically significant higher scores in the Punitive Strategies when compared with children in the Social and Social Solitary profile. Additionally, children in the Solitary/Reticent profile have fathers who report significant less Punitive Strategies when compared with children in the Social Rough profile.

--- Insert Table 2 ---

No significant multivariate was found for sex (V = .02, F(8, 225) = .59, p = .78, = .02, π = .27), but a significant multivariate interaction was revealed between play profiles and sex (V = .19, F(24, 681) = 1.87, p = .01, = .06, π = .99). For parenting a significant result for father's Punitive Strategies (F (3, 241) = 3.84, p = .01, η_p^2 = .05), was found, scores were higher for boys especially if they had a Solitary/Reticent play profile (*M* = 1.60, *SD* = .12), and for girls with a Social Rough play profile (*M* = 2.08, *SD* = .18).

5 Discussion

Based on teachers' descriptions of children's play behaviors, in the school context, four profiles were identified: Solitary/Reticent, Social Rough, Social and Social Solitary. The Solitary/Reticent profile is described as a nonsocial profile since it has the lowest scores of social play, and is it also defined by higher scores of reticent behaviors and moderate scores of solitary behaviors. The Social, Social Rough and Social Solitary were considered social profiles, since no significant differences were found for social play, although differences were found for rough play and solitary-passive behaviors. Highlighting that, at least in this sample, children characterized as social are not a simple and homogenous group.

As expected, children who usually engaged in social play are described as having higher levels of Effortful Control compared to children who displayed more frequent non-social behaviors. Effortful Control entails the capacity to direct attention and activate or disactivate behavioral responses in order to adapt to the situation (Putnam and Rothbart, 2006), and thus associated with higher social competence. In addition, children with a Social Rough Profile scored significantly lower on Effortful Control than children with a Social Play profile. This result was not expected, as for example, in Peterson and Flanders' (2005) model it is argued that rough-and-tumble play is a key contribute to the development of self-regulation. More studies are necessary to understand if this more "disorderly" type of play is in fact associated with children's lower regulatory abilities; or since it is more challenging, it is perceived less positively by adults.

Considering father's parenting styles, our findings showed significantly higher scores of father's Punitive Strategies in children with a Social Rough Profile. This type of strategy is characterized by

the disciplinary use of punishments without accompanying explanations or reasons for doing so (Robinson et al., 2001). Although we should interpret these results with caution since on average these values are relatively low. Despite studies describing fathers as encouraging of this type of active, physical, and 'rough' play, in our sample it is possible that fathers perceive this type of behavior (play fights, rough and tumble) as more challenging to family and group norms, since it can be perceived by adults as a form of aggression and an unsafe activity (Panksepp, 1993), and therefore use more punitive strategies (although the average values are low). Future studies should explore possible cultural differences in the way parents and teachers perceive this type of play. In addition, as recent studies (e.g., Scarzello et al., 2016) suggest that parenting and educational practices are greatly influenced by parents' knowledge of child development, future research should also consider how father's knowledge of child development and expected behaviors in each developmental stage may influence the parenting practices adopted.

Although a sex effect was not found, a significant interaction effect between Play Profiles and Child' Sex emerged regarding father's use of Punitive Strategies. Fathers reported a more frequent use of this parenting practice if they had sons with a Solitary/Reticent profile and if they had daughters with a Social Rough profile. These results are particularly interesting considering the existing literature regarding the possible influence of gender stereotypes and cultural norms in the sex differences found for the consequences of nonsocial behaviors (see Rubin et al., 2009). In Western European cultures (specially in southern countries) stereotypical gender norms suggest that males should be socialized to be assertive and dominant, and females are expected to be softer and nurturing (e.g., Gebauer et al., 2013). Disruption of social expectations and norms of how boys and girls should behave tends to lead to more negative responses from parents, teachers and peers (Doey et al., 2013; Rubin et al., 2009). Interestingly Lytton and Romney (1991) found that this gender bias seems to be more salient in fathers than mothers. A qualitative study assessing how parents think about father's rough-and-tumble play (StGeorge et al., 2018) found that although fathers believe this type of play should occur equally with girls and boys, in reality it does not. With some justifying that girls are more delicate and as such they should play more gender appropriate games. Alternatively, some studies (Jacklin et al., 1984) suggest that girls incite less this type of play from their fathers.

5.1 Limitations and Future Research

Some limitations can be identified, namely that this is not a longitudinal study and it relays on self-reports. Future studies should also include observational measures, such as the *The Play Observation Scale* (Rubin, 2001), in order to provide a more refined taxonomy of children's play behaviors and their motivations. Additionally, even though the aim of the study was to explore fathers, future studies should also include mothers, allowing to test for main and interaction effects of both caregivers (e.g., Cabrera et al., 2018).

In this sample, we did not find strict categories of children's play behaviors, instead and according to their teachers, children seem to resort to different types of behaviors during their peer interactions, as multiple modes of adaptation within the peer group. Further studies should consider a person-centered approach, in order to attain more detailed knowledge of how Play Profiles emerge and understand its predictors, correlates and outcomes (Howard and Hoffman, 2017). Although based on self-reports, different and independent sources were used, therefore increasing the study validity. Another innovative aspect is the focus on the father's role in child's social and non-social behaviors, since the literature is mostly focused on mothers (e.g., Hastings et al., 2010; McShane and Hastings, 2009), and as Cabrera and colleagues (2018) stated fathers are parents too, and should be fully integrated both in research and in parenting interventions. Since children who consistently display low quality of peer interactions may be more susceptible to later social-emotional difficulties (Cheah

et al., 2001), having the means to identify these difficulties early on should be a priority in early education.

6 Manuscript Formatting

6.1 Figures

Figure 1.
Final four-cluster solution based on children´s play behaviors, and Children's Play Profiles Characterization. The X axis represents the Children's Play Behaviors, and the Y axis the averages on a 5-point scale. The lines illustrate the averages of Play Behaviors for each cluster/profile.

6.2 Tables

Table 1.
Comparison of Children's Play Behaviors Dimensions between Play Profiles.

PPBS	1.Solitary /Reticent (n = 33)	2.Social Rough (n = 77)	3.Social (n = 60)	4.Social Solitary (n = 73)	ANOVAs			Tests *a posteriori*
	M (SD)	M (SD)	M (SD)	M (SD)	F	p	η^2_p	
Reticent	3.22(.69)	1.81(.55)	1.63(.43)	2.25(.52)	72.15*	.00	.48	1>2***, 1>3***, 1>4***, 2<4***, 3<4***
Solitary-Passive	3.62(.65)	3.15(.68)	2.56(.54)	3.48(.61)	31.08*	.00	.28	1>2***, 1>3***, 2>3***, 2<4**, 3<4***
Solitary-Active	3.02(.77)	2.34(.93)	2.02(.52)	3.48(.70)	50.35*	.00	.39	1>2***, 1>3***, 1<4*, 4>2***, 4>3***
Social Play	2.95(.58)	4.50(.49)	4.48(.43)	4.38(.40)	101.16*	.00	.56	1<2***, 1<3***, 1<4***
Rough Play	1.52(.68)	3.97(.84)	1.45(.54)	1.85(.76)	181.80*	.00	.70	1<2***, 2>3***, 2>4***, 3<4**

*p < .05, **p < .01, ***p < .001

Table 2
Comparison of Children's Temperament Dimensions and Father's Parenting Styles between Play Profiles.

PPBS	1.Solitary/ Reticent (n = 33)	2.Social Rough (n = 77)	3.Social (n = 60)	4.Social Solitary (n = 73)	ANOVAs			Tests *a posteriori*
	M (SD)	M (SD)	M (SD)	M (SD)	F	p	η^2_p	
Children's Temperament								
Extroversion	4.91(.15)	5.23(.15)	4.83(.13)	4.77(.10)	2.19	.09	.03	
Effortful Control	5.34(.10)	5.34(.10)	5.69(.09)	5.64(.07)	4.48*	.00	.06	1<3*, 2<3*
Negative Affectivity	4.64(.10)	4.49(.10)	4.40(.09)	4.59(.07)	1.42	.24	.02	
Father's Parenting Domains								
Warmth and Involvement	4.14(.09)	4.25(.09)	4.17(.08)	4.30(.06)	1.02	.38	.01	
Reasoning/Induction	3.75(.10)	3.72(.10)	3.55(.09)	3.69(.07)	1.00	.39	.01	
Democratic Participation	3.68(.12)	3.67(.12)	3.68(.10)	3.65(.08)	.03	.99	.00	
Corporal Punishment	1.61(.09)	1.81(.09)	1.56(.08)	1.54(.06)	2.38	.07	.03	
Punitive Strategies	1.45(.10)	1.82(.10)	1.48(.08)	1.38(.07)	4.66*	.00	.06	1<2*, 2>3*, 2>4**

*p< .05, **p < .01

7 Ethics Statement

This study was carried out in accordance with the recommendations of the American Psychological Association Ethical Guidelines and was approved by Iscte-Instituto Universitário de Lisboa's Ethics Committee under Protocol No. 27/2018. Participants – parents and teachers - provided their written informed consent to participate in the study in accordance to the Declaration of Helsinki.

8 Conflict of Interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Figure 1.JPEG