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Social Experiences of Children With Disabilities

In Inclusive Portuguese Preschool Settings

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Abstract

Based on peer sociometric reports, we examined how number of friendships, social acceptance, and characteristics of social networks vary as a function of disability profile. We also investigated teachers' awareness of the sociometric status of young children with disabilities. Participants were 86 children with disabilities (63 boys) enrolled in inclusive preschool classrooms from the Metropolitan Area of Lisbon, Portugal (M_{age} = 67.33 months, SD = 10.54). Findings suggest children with severe or socio-behavioral disabilities may be at increased risk for social rejection and isolation, having fewer friends and lower social network centrality than children with mild disabilities. Low agreement between teachers' classifications of the social status of children with disabilities and classifications based on peer nominations raises concerns about their awareness of processes of social rejection and neglect. Findings highlight the need for interventions to support positive social experiences at the dyadic and group levels in Portuguese inclusive preschool classrooms.

Keywords

Introduction

Early childhood inclusion aims to promote children's positive social relationships, sense of belonging, and membership, ensuring that every child has opportunities to participate in a variety of activities and contexts, independently of their abilities (Division for Early Childhood/National Association for the Education of Young Children, 2009). In inclusive preschool settings, children with and without disabilities have the opportunity to spend time together and interact with each other (Dietrich, 2005). However, children with disabilities seem to spend more time alone than their typically developed peers (Gamelas, 2003) and are more likely to be socially rejected (Odom et al., 2006).

Children's social experiences with peers can be analyzed at different levels of social complexity, including interactions, relationships, and groups (Rubin, Bukowski, & Parker, 2006). Interactions are the most basic level and represent complementary and interdependent social exchanges between two individuals. Relationships refer to a set of interactions that take place within a dyad of individuals who are known to each other, can influence new interactions between the members of the dyad, and are characterized by emotions, expectations, and shared meanings, developed over time. Friendships constitute one particular type of relationship. Finally, the third, and more complex level, is the group, a network of relationships between individuals that influence each other. Typically, groups have specific norms that characterize them and properties such as hierarchical organization and cohesiveness (Rubin et al., 2006).

Previous evidence suggests children with disabilities struggle at all levels of peer social experiences. For example, according to Guralnick (1990), children with disabilities present difficulties in engaging in group play and perform specific social behaviors, do not use important

social processes such as negotiation, have fewer friendships, and are less often chosen to play with or to be a resource or a model for peers.

In this study, we investigated the social experiences of Portuguese preschoolers with disabilities, in inclusive preschool classrooms, at two levels: relationships (i.e., friendships) and groups. In Portugal, the legal framework for special education is inclusion-oriented, ensuring that 99% of all children with disabilities are served in regular schools (87% in public schools), with only 13% of these not participating full time in their regular classroom (Direção-Geral de Estatísticas da Educação e Ciência, 2016). Recently, based on a representative sample, the Inspeção-Geral de Educação e Ciência (2015) reported that about 20% of public Portuguese preschool classrooms included at least one child with disabilities. Moreover, the Portuguese preschool coverage rate is rather high, with 96.1%, 90.6%, and 76.9% of children aged 5, 4, and 3 years old, respectively, enrolled in preschool settings (Direção-Geral de Estatísticas da Educação e Ciência, 2015).

Friendship

Friendships are dyadic, reciprocal, and voluntary relationships (e.g., Goldman, 2007; Rubin et al., 2006). Friends choose to stay with one another, play, express enjoyment and positive affect (e.g., Dietrich, 2005; Hollingsworth & Buysse, 2009). Children with disabilities who establish friendships are more likely to be socially interactive (Guralnick, Gottman, & Hammond, 1996), have less frequent solitary play and more playmates than children without friendships (Guralnick, Neville, Hammond, & Connor, 2007). Furthermore, Meyer and Ostrosky (2016) found evidence that having a close friendship may partially mediate the association between social competence and peer acceptance. Children with disabilities who have friends also present better results in behavioral characteristics such as activity level, reactivity, goal-directedness, and

responsiveness to adults (Buysse, 1993). In an inclusive setting, friends without disabilities can be an important resource for children with disabilities to develop social competence (Guralnick, 1990) because they tend to support and scaffold dyadic interactions (Guralnick, Connor, & Johnson, 2011).

Friendships of preschool children with and without disabilities seem to be similar (Dietrich, 2005; Hollingsworth & Buysse, 2009; Meyer & Ostrosky, 2014). However, in general, children with disabilities have fewer reciprocal relationships than peers without disabilities (Buysse, Goldman, & Skinner, 2002). The number of friends seems to be associated with type of diagnosis (Buysse, 1993) and developmental status (Guralnick et al., 1996). For example, research has shown children with language disabilities have more friends than children with developmental delay or cognitive disabilities (Buysse, 1993; Guralnick et al., 1996), and children with reciprocal friends seem to have higher developmental age than children without reciprocal friends (Buysse, 1993).

Studies with preschool-age children without disabilities found that young children form, essentially, same-gender friendship dyads (Vaughn, Colvin, Azria, Caya, & Krzysik, 2001). The same pattern has been found for children with ASD (Kasari, Locke, Gulsrud, & Rotheram-Fuller, 2011). However, despite the preponderance of boys with disabilities, in most cases their friends are girls (Guralnick et al., 2007). Conversely, Diamond, Hong, and Tu (2008) found it is more likely for a girl to choose a child with disabilities to play with. Therefore, boys may be at a disadvantage when compared to girls and consequently have an increased risk of social rejection. Further examination of the role of gender on the social experiences of children with disabilities is thus warranted.

Social Acceptance

Within a group, individual children can have different social experiences, which can be described in terms of social acceptance and rejection. Social acceptance and rejection quantify how much peers like or dislike a child (Rubin et al., 2006).

Social acceptance and rejection of young children with disabilities have been the subject of few studies (e.g., Odom et al., 2006). Despite the fact that young children in inclusive classrooms show high acceptance towards peers with disabilities (Diamond, 2001), about a quarter of young children with disabilities are rejected (Odom et al., 2006) and typically developing children's identification of a peer as having a disability seems to be negatively associated to their associative/cooperative play (Yu, Ostrosky, & Fowler, 2015).

Children's individual characteristics, such as type of disability, degree of disability, and age seem to be related to their social acceptance. For example, previous research suggests children with speech and language impairments or orthopedic impairments are more socially accepted by peers than children with intellectual disabilities and autism-pervasive developmental disorder (Odom et al., 2006). Furthermore, younger children and children with more severe disabilities seem to be more socially accepted (Aguiar, Moiteiro, & Pimentel, 2010). Research also suggests social acceptance is associated with social behavior such as interest in peers, social awareness, communication, and social skills. In contrast, social rejection appears associated with social withdrawal (related to internalizing behavior problems) and conflict-aggression (i.e., externalizing behavior problems) (Odom et al., 2006).

Sociometric Status

At the group level, children can also be classified into five social statuses: popular, rejected, neglected, average, and controversial (Coie, Dodge, & Coppotelli, 1982; Newcomb, Bukowski, & Pattee, 1993). Social status seems to be an important predictor of children's subsequent

adaptation (Peceguina, Santos, & Daniel, 2008). However, previous research, based on evidence from peer reports, suggests children with disabilities have more disadvantaged sociometric statuses within their peer groups, when compared to their typically developing peers (Ochoa & Olivarez, 1995). Interestingly, to the best of our knowledge, there are no data on teachers' awareness of the sociometric status of young children with disabilities in the peer group, which is likely necessary to identify and support children experiencing social rejection or neglect.

Social Networks

Still, at the group level, social networks analysis provides information on the structure of the group and its influence on individuals (Wasserman & Faust, 2009). For example, one may identify cohesive subgroups such as cliques, constituted by at least three individuals with mutual ties (i.e., all "choosing" each other) (Scott, 2009; Wasserman & Faust, 2009) or determine the children's centrality in the peer group based on network activity. Individuals with higher degree centrality have more connections, while individuals with lower degree centrality have fewer links to other individuals in the social network, taking peripheral positions in the group (Scott, 2009).

Very limited research has examined the characteristics of the social networks of preschool children with disabilities. The few available studies focus on specific types of disability, suggesting, for example, that older children with high-functioning autism spectrum disorder (ASD) present low levels of social network centrality, take more peripheral positions in the social structure of the group (Chamberlain, Kasari, & Rotheram-Fuller, 2007), and have a smaller network (Kasari et al., 2011) than their peers. Aguiar, Pimentel, Moiteiro, Boavida, and Figueiredo (2011) found evidence that children with physical disabilities are more involved in peer social networks than children with sociocognitive disabilities.

In conclusion, we now know enough to understand that children with disabilities struggle with the demands of being part of a friendship dyad and a group of children. Early childhood inclusion aims towards ensuring children's positive social relationships, sense of belonging, and membership (Division for Early Childhood/National Association for the Education of Young Children, 2009), addressing multiple levels of peer-related social experiences (i.e., individual, dyadic, and group). Consequently, it is important to understand more clearly which individual characteristics place young children with disabilities at an increased risk of social rejection or exclusion in inclusive preschool settings. As these social experiences occur in the peer system, we will focus on indicators based on peer sociometric reports, contributing to a body of evidence built mostly on teachers' report. Therefore, in this study, we examined how number of friendships, social acceptance, participation in cliques, and degree centrality vary as a function of type of disability. We anticipated that children with socio-behavioral disabilities would be more likely to have fewer friendships, be socially rejected, participate in fewer cliques, and occupy more peripheral positions, than children identified with physical disabilities. We considered whether children's gender and age moderated these associations. Furthermore, we examined teachers' awareness of the sociometric status of young children with disabilities in the peer group by comparing teachers' classification of children's social status and their social status derived from standard sociometric data. We thought that such information would likely help understand the extent to which teachers were able to identify children at risk for peer rejection or neglect.

Method

Participants

Eighty-six children with disabilities (63 boys) from 86 inclusive preschool classrooms of the Metropolitan Area of Lisbon, Portugal, participated in the study. Children's age ranged between

45 and 88 months ($M = 67.53$, $SD = 10.54$). One child with disabilities was randomly selected per classroom, according to the following criteria: (a) receiving special education or early childhood intervention services under Decree-Law n.º 3/2008 or Decree-Law n.º 281/2009, respectively; (b) not having an extreme disability profile; (c) having parental consent; (d) attending a classroom where at least 60% of all children also had parental consent to participate in data collection procedures; and (e) not attending a classroom serving exclusively or mostly 3-year-olds (in order to increase both the reliability and the validity of outcome measures).

Children with extreme disability profiles (e.g., children who were simultaneously deaf and blind and had no mobility) were excluded because, based on our previous experience, these children are usually identified as extreme outliers in most measures, resulting in their removal from subsequent analyses. One child with disabilities was randomly selected in each classroom in order to avoid nesting and decrease the amount of information requested from each teacher. Note also that, by law, Portuguese preschool classrooms should not include more than two children with disabilities. The minimum participation rate of classroom children in the sociometric interviews was based on two types of information: previous studies reporting participation rates above 70% (e.g., Santos, Daniel, Fernandes, & Vaughn, 2015) and findings suggesting a more limited pool of participants may also provide valid information (see Zakriski et al., 1999). Nevertheless, mean participation rate in the current study was 82.36% ($SD = 12.34$). Overall, in addition to the 86 target children, the study included 1,493 children (731 boys), aged between 34.0 and 89.6 months ($M = 61.68$, $SD = 8.79$).

According to teachers' reports, based mostly on the information available on target-children's individual files, 25 children had developmental delay, 19 children had ASD, 8 children had rare disorders (e.g., Guillain-Barré syndrome, WAGR syndrome, Goldenhar

syndrome), 7 children had speech or language impairments, 4 children had cerebral palsy, 3 children had Down syndrome, 2 children had multiple disabilities, 2 children had emotional disabilities, 8 children had other disabilities, 5 children had no diagnosis (i.e., were receiving services but assessment was still ongoing or had been inconclusive), and data were missing for 3 children.

Fourteen percent of participating children were rated by teachers as having a profound disability in at least one domain of the ABILITIES Index (Simeonsson & Bailey, 1991/2005). Using the same criteria, 42% were rated as having a severe disability, 31% were rated as having a moderate disability, 7% were rated as having a mild disability, and about 4% were rated as having a suspected disability. Data on the ABILITIES Index were missing for 2 % of participating children.

In this study, preschool classroom teachers were informants for several variables. Eighty-six teachers (1 male), aged between 24 and 60 years old ($M = 46.45$, $SD = 8.46$) participated. About 96% of teachers had at least one-year of experience in classrooms with children with disabilities and 58% had no experience in early childhood intervention or early childhood special education.

About 78% of classrooms were located in public preschools, 15% were located in private non-profit centers, and 7% were located in private for-profit centers. Most classrooms (83.7%) were mixed-aged, with 7% of classrooms serving 4-years-olds and 9.3% of classrooms serving 5-year-olds. In Portugal, older children have priority for publicly funded preschool enrollment, which means that, typically, mixed-aged classrooms (especially in urban areas) are mostly composed of 5- and 4-year-old children, with few 3-year-olds (considering children's age at the

beginning of the school year). The number of children in each classroom ranged between 14 and 27 ($M = 21.30$, $SD = 2.53$).

Measures and Procedures

 Severity of disability. The ABILITIES Index (Simeonsson & Bailey, 1991/2005) is a measure designed to assess children's functional abilities/disabilities in nine domains (19 items): audition, behavior and social skills, intellectual functioning, limbs, intentional communication, tonicity, integrity of physical health, eyes, and structural status. Teachers rated children on each domain using a 6-point scale (1 = *normal ability*, 2 = *suspected difficulty*, 3 = *mild difficulty*, 4 = *moderate difficulty*, 5 = *severe difficulty*, and 6 = *profound difficulty*). The overall degree of disability across domains was calculated through a sum of all dimensions multiplied by the following weights: audition = 1.8; social skills = 1.4; inadequate behavior = 1.7; intellectual function = 2.0; limbs, hands = 1.5; limbs, arms = 1.4; limbs, legs = 1.6; understanding = 1.2; communicating with others = 1.0; tonicity, tightness = 1.5; tonicity, looseness = 1.4; overall health = 1.5; vision = 1.7; and structural status = 1.3 (Grande & Aguiar, 2011).

 This index has been used in Portuguese studies and has shown internal consistency, informant agreement, convergent-discriminant validity (Grande & Aguiar, 2011), and stability over time (Bailey, Simeonsson, Buysse, & Smith, 1993). In our study, internal consistency was .81 for all items.

Verbal and nonverbal competence. Verbal and nonverbal competence of children with disabilities was assessed with the validated Portuguese version of the Wechsler Preschool and Primary Scale of Intelligence - Revised (WPPSI-R; Wechsler, 2010). This is a standardized measure, composed of two scales, verbal and performance, with six subtests for each one. In this study, we used four or five subtests of each scale. For the verbal competence score, we used the

information, arithmetic, vocabulary, similarities, and comprehension (optional) subtests; for the performance score, we used the object assembly, geometric design, block design, picture completion, and mazes (optional) subtests. Children's testing was conducted individually, in a quiet room at the preschool center, by researchers with (at least) a master's degree in psychology. We calculated mean scores for the two scales. Internal consistency was .92 for verbal competence and .84 for performance scores.

Social skills and problem behaviors. Teachers completed the preschool version of the Social Skills Rating System (SSRS; Gresham & Elliott, 1990/2007) to assess children's social skills and problem behaviors. As in previous studies (Aguiar et al., 2010), we used two scales, social skills (α = .93) and problem behaviors (α = .82), as well as two subscales of problem behaviors: externalizing problems (α = .85) and internalizing problems (α = .68). Children's behaviors were rated on frequency (0 = *never*, 1 = *sometimes*, 2 = *very often*) for a total of 40 items, 30 items related to social skills and 10 items related to problem behaviors (6 items for externalizing problems and 4 items for internalizing problems). For social skills, higher scores reflected higher competence. For problem behaviors, higher scores reflected more behavior problems.

Friendship. Collection of sociometric data began in January/February, about 4 to 5 months after the beginning of the school year, in order to allow social relationships to become stable and friendships to develop. Individual interviews were performed, in a separated room, with all children in the classroom with parental consent. The interviews followed a detailed protocol and were conducted by researchers with (at least) a master's degree in psychology. During the interviews, two different sociometric measures were used: peer nominations and ratings. These sociometric measures have often been used in studies about friendship and social acceptance (e.g., Aguiar et al., 2010; Meyer & Ostrosky, 2016; Peceguina et al., 2008). In these two tasks,

we used photographs of all children in the classroom. In the peer nomination task, children were asked to choose three children (photos) they "liked to play with the most" (positive nominations) and three children they "liked to play with the least" (negative nominations). For peer ratings, we used children's photographs and three boxes, one with a happy face to put in photos of the peers children "liked to play with a lot" (rating of 3), another with a neutral face to put in photos of peers they "liked to play with sometimes" (rating of 2), and the last one, with a sad face, to put in the photos of children they "did not like to play with" (rating of 1). Prior to the peer ratings task, several trials using pictures of different foods were conducted to establish children's understanding of the task. Children with disabilities were also invited to participate, except in two cases due to their disability profile (i.e., affecting vision or communication). Six children with disabilities did not understand the sociometric tasks (i.e., were non-responsive or could not successfully complete the initial trials with pictures of food) and one child left the center prior to the sociometric data collection (resulting in missing data for friendship). These data were converted into two sociometric matrixes (nominations and ratings) and a new matrix was created to identify children's friendships, based on reciprocal positive nominations and positive ratings, cumulatively. Therefore, only when a child with disabilities both nominated and rated positively a peer and, in turn, the same peer nominated and rated positively the child with disabilities, were the two children identified as reciprocal friends.

Social acceptance. In each classroom, mean sociometric ratings received by each child were converted into a *z* score, reflecting individual children's social acceptance.

Sociometric status. Sociometric status of children with disabilities was calculated from the absolute frequency of positive nominations from peers (like most – LM) and negative nominations (like least – LL), social preference (P = LM - LL) and social impact (I = LM + LL).

Social preference and social impact were based on standardized scores of positive and negative nominations. Children with disabilities were classified in six sociometric status groups: (a) popular children ($P > 1.0$, $LM > 0$, and $LL < 0$), (b) rejected children ($P < 1.0$, $LL > 0$, and $LM < 0$), (c) neglected children ($I < 1.0$ and absolute frequency of positive nominations $= 0$), (d) controversial children ($I > 1.0$, LM and $LL > 0$), (e) average children (P and I between -0.5 e 0.5), and other (children not classified with any sociometric status) (Peceguina et al., 2008).

Sociometric status was also evaluated by teachers, based on their perception of children's experiences in the group. Based on Andrade et al. (2005), teachers were asked to classify each child as being: (a) actively rejected by his/her peers (rejected), (b) mostly ignored by his/her peers (neglected), (c) actively rejected by some peers but popular among other peers (controversial), (d) average popular (average), or (e) very popular among his/her peers (popular). Preliminary results, based on teachers' classifications of children's sociometric status in elementary school-aged children, suggest the concurrent validity of this procedure, based on associations with peer nominations (Andrade et al., 2005).

Social networks. The sociometric matrixes previously described were used to compute children's degree of centrality and number of cliques, based on social network analyses with UCINET (v. 6.553). UCINET (Borgatti, Everett, & Freeman, 2002) is a software that involves a set of network analyses techniques, allowing researchers to identify and visualize different social network structures and substructures, as well as the relationship between individuals or the relationships of a specific individual (Hanneman & Riddle, 2005). In our study, children's centrality was operationalized as normalized degree centrality (i.e., the number of vertices adjacent to a given vertex, divided by the maximum possible degree, expressed as a percentage) and cliques were operationalized as the number of maximal complete sub-graphs (i.e., subgroups

in which all children are connected to each other), with a minimum of three children, each child participated in.

Results

Descriptive Statistics

Descriptive statistics for study variables are presented in Table 1. According to teachers' report, children with disabilities displayed average social skills and externalizing behavior, and low levels of internalizing behavior. Regarding the number of reciprocal friendships, about 55.8% of children had no friends, 25.6% had one friend, and only 7.0% had two friends. Note that 11.6% of the children did not participate in the sociometric tasks or did not understand them, resulting in missing data on reciprocal friendships. Average social acceptance was low, with 45.9% of children scoring below the 25th percentile of their classroom peer group and only 8.2% scoring above the 75th percentile. Furthermore, children with disabilities had a low degree of centrality and only three children with disabilities were involved in a clique.

Sociometric status based on sociometric peer nominations and teacher report. Children's sociometric status classified by teachers was more positive than sociometric status based on peer sociometric nominations. As shown in Table 2, these two classifications showed low agreement, with teachers classifying 26.8% of children as popular and 3.7% of children as rejected while classifications based on peer nominations resulted in 3.7% of children classified as popular and 41.5% classified as rejected. Teacher or peer data were missing for four children (therefore, for this analysis, $n = 82$). The chi-square test was performed to examine independence of teacher and peer ratings. Monte Carlo simulation was used to ensure statistical accuracy, because the assumptions of χ^2 were not verified (Maroco, 2011). Results indicated that the sociometric status

rated by teachers was independent of the sociometric status rated by peers ($\chi^2(16) = 8.31$, $p = .93$, $n = 53$).

Correlations Among Variables

Table 3 presents the Spearman correlation coefficients among variables. As expected, centrality and number of reciprocal friendships were strongly correlated. Peer social acceptance was negatively and moderately correlated to problem behaviors, and, specifically, externalizing behaviors. Verbal competence was moderately correlated with the number of reciprocal friendships and degree of centrality. Sociometric status rated by teacher (but not sociometric status based on peer nominations) was strongly positively correlated with social skills and negatively correlated with problem behaviors, including both externalizing (moderate effect) and internalizing behaviors (noteworthy effect). Sociometric status rated by teachers was also correlated with peer social acceptance.

Characteristics of Accepted and Rejected Children

Based on standardized scores of social acceptance, we divided participating children in two distinct groups: accepted and rejected. Similar to the findings of Odom et al. (2006), children were considered accepted if they had a score of social acceptance above 0.5 and rejected if had a score below -1.0. These criteria were used over popular and rejected sociometric status because we were interested in social acceptance within the group and not popularity among peers. Using such criteria, 16 children (19%) were identified as accepted and 29 children (34.5%) were identified as rejected. Table 4 presents the characteristics of both groups of children. The type of disability most represented in the rejected children group was developmental delay. When compared to rejected children, accepted children were younger ($d = -0.54$); had fewer behavior problems ($d = -0.85$), specifically, externalizing behavior problems ($d = -1.04$); had a higher

number of reciprocal friends ($d = 0.62$); and were more likely to be involved in a clique ($d = 0.79$).

Social Experiences as a Function of Type of Disability

In order to describe the social experiences of children with different disability profiles, we first conducted hierarchical clusters analysis, using Ward's method. Sensorial skills (mean scores of audition and vision) and body and overall health (mean scores of limbs, tonicity, integrity of physical health, and structural status) from the ABILITIES Index, the verbal and nonverbal competence scores from the WPPSI-R, and the social skills and problem behaviors (reversed) scores from the Social Skills Rating System were used in cluster analysis. As some variables represented ability and others disability, to ensure consistency and facilitate interpretation, we reversed all scores representing disability, therefore reversing all dimensions from the ABILITIES Index and problem behaviors from the SSRS. For seven children, data were missing for at least one measure used in this cluster analysis (therefore, $n = 79$). Table 5 presents the characteristics of children included in each disability profile.

Hierarchical cluster analysis grouped children in four disability profiles (see Figure 1): mild disabilities ($n = 27$), severe disabilities ($n = 15$), socio-behavioral disabilities ($n = 24$), and physical disabilities ($n = 13$). The mild disabilities profile included a relatively high-functioning group of children, across most areas. The severe disabilities profile included a low-functioning group of children, across most areas, particularly in verbal and nonverbal performance, as measured by the WPPSI-R, and body and overall health. The socio-behavioral disabilities profile included children with lower scores on social skills and appropriate behavior and relatively high functioning in sensorial skills, body structure and health. Finally, the physical disabilities profile

included children with lower than average body and overall health and higher than average social skills and adjusted behavior.

Disability profiles differed as a function of the number of reciprocal friends ($X^2_{KW}(3) =$ 9.12, $p = .03$, $n = 74$), with children with severe disabilities having fewer reciprocal friends than children with mild disabilities ($d = -1.10$) or physical disabilities ($d = -0.91$), and children with socio-behavioral disabilities having fewer friends than children with mild disabilities ($d = -0.59$).

In order to test the hypothesized moderating effects of children's gender and age on the associations between disability profile and children's number of reciprocal friends, social acceptance, and degree of centrality, we conducted multiple regression analysis. Dummy coding was used for disability profiles, selecting mild disabilities as the reference group. Four models were tested for each outcome: the first model included only disability profile; the second model included disability profile, gender, and age; the third model tested the interactions between gender and disability profile, controlling for children's age; and, finally, the fourth model tested the interactions between age and disability profile, controlling for children's gender. Regression models predicting social acceptance and network centrality were not statistically significant and are not reported, for parsimony.

The first model for friendship, $F(3,70) = 3.06$, $p < .05$, $R^2_a = .08$, replicated the effects of the inferential analyses, indicating that children with severe or socio-behavioral disabilities had fewer friends than children with mild disabilities (see Table 6). These effects were stable across the first two models. The second model, $F(5,68)=2.76$, $p < .05$, $R^2_a = .11$, indicated a statistically significant effect of children's gender which was not replicated in the subsequent models. In the third model, $F(8,65)=2.43$, $p < .05$, $R^2_a = .14$, an interaction between the physical disabilities profile and children's gender was found, associated with the fact that girls with physical

disabilities, in this sample, had no reciprocal friends. Finally, the fourth model, was not statistically significant, and consequently did not confirm interactions between children's disability profile and age.

Discussion

In this study, we examined how number of friendships, social acceptance, and characteristics of social networks varied as a function of disability, while testing for the moderating effects of gender and age. We also aimed to examine teachers' awareness of the sociometric status of young children with disabilities in the peer group by comparing teachers' classification of children's social status and social status obtained through peer nominations.

We anticipated that children with socio-behavioral disabilities (including behavior problems) would be more likely to have fewer friendships, be socially rejected, have smaller networks, and occupy more peripheral positions, than children identified with physical disabilities. Our hypothesis was only partially confirmed. However, the social experiences of children with disabilities do seem to vary as a function of their disability profile. Our findings suggest that children with severe or socio-behavioral disabilities have fewer friends than children with mild disabilities. Nevertheless, children with physical disabilities did not differ from children with mild disabilities in predicting the number of friendships.

In our sample, children with severe disabilities across domains and children with socio-behavioral disabilities experienced unfavorable circumstances at the relationship level, as suggested by the number of reciprocal friendships. These findings are mostly consistent with reports from Aguiar et al. (2011), in that participation in social relationships seem to be more challenging for children with social and behavioral problems or for children with severe disabilities in multiple developmental domains (including cognitive, social, and behavior

difficulties), but not particularly for children with physical problems. Our approach to type of disabilities was not based on diagnostic category, as are most studies in the field, but rather was focused on the description of children's functioning on several domains, independent of their diagnosis. However, we do note that disabilities such as developmental delay (see Guralnick et al., 1996) and ASD (see Odom et al. 2006) were the most represented in the disability profiles with fewer friends.

Age and gender were tested as moderators of the associations between disability profile and friendship. Based on previous research (Aguiar et al., 2010), we expected younger children to be more accepted than older children and to have more friends. However, despite the fact that descriptive analyses examining the characteristics of accepted and rejected children showed that the accepted group was, on average, younger, no statistically significant effect was found for age in hierarchical multiple regression controlling for type of disabilities and gender. In this study, gender had an effect on the number of friendships in one of the models, which disappeared when interactions were tested between gender and disability profile. Statistically significant interactions between the physical disabilities profile and gender suggest that girls with physical disabilities had fewer friends (actually, none of the girls in this profile had a single friend). This finding was unexpected, because same-gender group dyads are prevalent in this age group (Vaughn et al., 2001) and girls are more likely to choose a child with disabilities to play with (Diamond et al., 2008). Thus, confirmation based on studies with larger samples is warranted, aiming to examine whether disabilities associated with use of limbs, tonicity, integrity of physical health, and body structure, likely more visible to other children than other disabilities, are socially more detrimental for girls than for boys, which raises important gender issues.

When examining the characteristics of accepted and rejected children, based on peer sociometric ratings, we found that accepted children had more friends, higher social network centrality, and might be involved in a clique (which did not happen in the rejected group). Other differences between accepted and rejected children were related to children's age (as discussed above) and problem behaviors, with rejected children showing higher levels of problem behaviors and, specifically, externalizing problems, since differences in internalizing behavior were not statistically significant. The salience of children's externalizing behavior to peer rejection is consistent with previous literature (Odom et al., 2006).

We found fewer friends for children with disabilities than the majority of other studies (e.g., Buysse, 1993). These differences may be accounted for by the use of different informants and methods associated with different criteria for defining friendship. Note that few studies have considered the perspective of children in identifying friendships of children with disabilities (Meyer & Ostrosky, 2014), with previous reports of children's friendships, clearly more positive, relying mostly on teachers' or parents' reports (e.g., Buysse, 1993). However, recently, using peer nominations, Meyer and Ostrosky (2016) found a similar mean number of friends for children with disabilities prior to implementing an intervention to increase the number of close friendships.

Interestingly, our findings on children's social status suggest different informants, in this case, children and teachers, provide different views of the status of children with disabilities in their peer group. Teachers classified only 3.7% of children with disabilities as being rejected by the peer group. This proportion is similar to previous reports of teacher ratings of children without disabilities (Andrade et al., 2005). However, classifications of social status based on peer sociometric nominations resulted in 41.5% of children considered to be rejected by their peers.

The independence of teacher and peer classifications of social status is also visible in the percentage of children considered to be popular within the peer group, with teachers classifying 26.8% of children as popular and only 3.7% of children classified as popular on the basis of peer reports. Naturally, it can be argued that different constructs were measured through teacher and peer reports, given the distinction between sociometric popularity, an indicator of acceptance, and perceived popularity (see Asher & McDonald, 2009). While such differences may partially account for the disagreement found among teacher and peer reports of peer social status, the modest to strong correlations previously reported between perceived popularity and sociometric popularity (see Asher & McDonald) suggest the independence in teacher and peer reports found in this study should be valued. As social status seems to be an important predictor of children's outcomes (see Rubin et al., 2006), it is important that teachers are attuned to the social experiences of children with disabilities in their group, being able to identify processes of social rejection and neglect that hinder the desired outcomes of early childhood inclusion. Because being able to identify children at risk for social rejection is instrumental in providing support, our findings suggest this may be an important area of professional development.

Few studies describe features of the social networks of young children with disabilities. In this study, children presented low centrality, which means they occupied peripheral positions in the group, with few reciprocal connections to their peers. Findings are consistent with previous research reporting limited social networks (Guralnick, 1997) and low levels of centrality (Kasari et al., 2011) for children with disabilities.

Limitations

Several limitations should be considered in discussing our findings. The number of participants was small, with a highly diverse range of disabilities, which may limit our understanding of the

specificities of different disability profiles. Moreover, some children with disabilities did not understand the sociometric task or could not participate, resulting in a possible bias associated with missing data on children likely to exhibit lower-level functioning. Another limitation to be considered is related to the participation rate of classroom children in the sociometric tasks: whenever full participation is not secured, the complete range of relationships and social structures within the classroom cannot be assessed. Furthermore, as teacher's awareness of children's social status among the peer group is likely to be influenced by the amount of time children spend in the classroom, children's attendance and time spent in pull-out interventions should be considered in future research on this topic. Note, however, that time is likely to be relevant both for teacher and peer perceptions of children's social status. Finally, building on the need for more studies with children as informants, including children with disabilities themselves (Meyer & Ostrosky, 2014), we recruited both teachers and children as participants. However, consideration of parents' reports would add relevant information on children's experiences with peers, namely outside the preschool setting, due to their role in promoting and supporting children social relationships (Buysse, 1993; Yu, Ostrosky, & Fowler, 2011).

Conclusions

Based on an approach focused on functionality rather on diagnosis, we found that children with severe disabilities across multiple domains, and children with socio-behavioral disabilities may be at increased risk for social rejection and, therefore, may need focused interventions aiming for positive social experiences, especially at the dyadic level. Girls with physical disabilities are also likely to benefit from tailored interventions. Based on peer reports, our findings suggested considerable levels of rejection and isolation experienced by children with disabilities in

Portuguese inclusive early childhood settings, of which early childhood teachers may not be fully aware.

Implications

Based on our findings, we recommend Portuguese preschool teachers should benefit from professional development opportunities aiming to (a) support their efforts in identifying children experiencing social rejection by their peers and (b) promote peer relationships, particularly for children with socio-behavioral disabilities and severe disabilities. Interventions such as the Pyramid Model for promoting social-emotional competence (see Hemmeter, Snyder, Fox, & Algina, 2016) might be important resources to this effect. Early childhood intervention/early childhood special education professionals might also have an important role in supporting preschool teachers in these tasks, namely through consultation practices.

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Table 1. Descriptive Statistics of the Major Study Variables

Variable	*M*	*SD*	Min.	Max.	*N*
Social skills	0.95	0.39	0.07	1.85	86
Problem behaviors	0.76	0.40	0.00	1.90	86
Problem externalizing behaviors	0.97	0.53	0.00	2.00	86
Problem internalizing behaviors	0.45	0.42	0.00	1.75	86
Non verbal competence	6.72	3.12	1.00	15.00	81
Verbal competence	5.95	3.23	1.00	15.00	81
Number of friendships	0.45	0.64	0.00	2.00	76
Social acceptance (*z* scores)	-0.55	1.00	-2.63	2.03	84
Centrality - degree	0.03	0.04	0.00	0.20	76
Number of cliques	0.04	0.20	0.00	1.00	76

Table 2. Sociometric Status of Children with Disabilities Based on Peer and Teachers' Report

		Sociometric status based on teachers' classifications					Total
		Rejected	Neglected	Controversial	Average	Popular	
	Rejected	2	3	8	13	8	34
	Neglected	0	0	1	3	0	4
Sociometric status based on peer nominations	Controversial	0	0	1	0	0	1
	Average	0	0	4	4	3	11
	Popular	0	0	1	1	1	3
	Other	1	2	7	9	10	29
	Total	3	5	22	30	22	82

Table 3. Spearman Correlation Coefficients Among Variables

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Gender (boys = 1, girls = 0)	-												
2. Age	-.05	-											
3. Social skills	-.21	.17	-										
4. Problem behaviors	.27*	-.05	-.52**	-									
5. Externalizing behaviors	.22*	-.06	-.41**	.92**	-								
6. Internalizing behaviors	.29*	-.03	-.52**	.62**	.29**	-							
7. Non verbal competence	.08	-.05	.23*	-.15	-.18	.01	-						
8. Verbal competence	-.00	-.17	.34**	-.14	-.16	-.05	.65**	-					
9. Number of friendships	.20	-.11	.27*	-.18	-.16	-.09	.30**	.45**	-				
10. Social acceptance (z scores)	-.13	-.17	.01	-.28*	-.28**	-.12	-.03	-.00	.33**	-			
11. Sociometric status - peers	-.20	-.13	-.12	-.04	-.06	.04	.21	.09	.43**	.43**	-		
12. Sociometric status - teacher	-.16	.09	.53**	-.43**	-.26*	-.57**	.04	.11	.20	.25*	.06	-	
13. Centrality - degree	.20	-.11	.25*	-.17	-.16	-.06	.31**	.44**	.98**	.35**	.45**	.19	-
14. Number of cliques	-.03	.08	.19	-.28*	-.28*	-.13	.25*	.12	.38**	.25*	.42**	.04	.38**

* $p < .05$. ** $p < .01$.

Table 4. Information on Gender, Type of Disabilities, Severity of Disabilities, Social Skills,

Problem Behaviors, Verbal and Nonverbal Competence, Reciprocal Friendships, and Social

Networks for Socially Accepted and Rejected Children

Variable	Accepted (n = 16)	Rejected (n =29)	Group comparisons
Gender			
Girls	4	6	
Boys	12	23	
Type of disability			
Developmental delay	3	10	
Autism Spectrum disorder	5	7	
Speech or language impairments	2	0	
Multiple disabilities	0	2	
Down syndrome	1	0	
Cerebral palsy	0	1	
Rare disorder	1	3	
No diagnosis or other Disabilities	3	4	
Age (months)[a]	62.97 (9.11)	68.33 (10.77)	1.68*
Severity of disabilities[a]	60.33 (19.39)	55.04 (13.64)	-1.05
Social skills[b]	0.97 (0.52)	0.96 (0.32)	218.50
Problem behaviors[a]	0.61 (0.34)	0.93 (0.41)	2.73**
Externalizing behaviors[a]	0.68 (0.45)	1.18 (0.51)	3.29**
Internalizing behaviors[a]	0.50 (0.45)	0.57 (0.49)	0.45
Verbal competence[a]	6.00 (3.96)	5.98 (3.21)	-0.02
Non verbal competence[a]	6.83 (4.04)	6.90 (2.90)	0.07
Number of friendships[b]	0.82 (0.87)	0.18 (0.39)	218.00*
Social network			
Cliques[b]	0.18 (0.41)	0.00 (0.00)	182.00
Centrality – degree[b]	0.05 (0.06)	0.01 (0.03)	220.00*

Note. Values within parentheses are standard deviations. [a] = t test; [b] = Mann Whitney test.

* $p < .05$. ** $p < .01$.

Table 5. Information on Gender, Type of Disabilities, Friendships, and Social Networks as a

Function of Disability Profile

Variable	Mild disabilities ($n = 27$)	Severe disabilities ($n = 15$)	Socio-behavioral disabilities ($n = 24$)	Physical disabilities ($n = 13$)	Group comparisons
Gender					
Girls	8	4	3	5	
Boys	19	11	21	8	
Type of disability					
Developmental delay	5	6	10	4	
Autism spectrum Disorder	7	1	8	1	
Speech or language impairments	5	0	2	0	
Cerebral palsy	0	2	0	2	
Down syndrome	0	3	0	0	
Multiple disabilities	1	0	1	0	
Rare disorder	1	3	0	3	
No diagnosis or other disabilities	7	0	3	3	
Age[a]	68.46 (9.12)	70.48 (12.74)	67.00 (9.12)	66.54 (9.94)	0.50
Number of friendships[b]	.67 (.68)	.09 (.30)	.30 (.56)	.62 (.77)	9.12*
Social acceptance[a]	- .45 (.87)	- .51 (1.05)	- .93 (1.00)	- .35 (.98)	1.51
Social network					
Cliques[b]	.11 (.32)	.00 (.00)	.00 (.00)	.00 (.00)	7.68
Centrality - degree[b]	.04 (.05)	.01 (.02)	.02 (.04)	.04 (.05)	5.37

Note. Values within parentheses are standard deviations. [a] = ANOVA; [b] = Kruskal-Wallis.

* $p < .05$.

Table 6. Multiple Regression Analysis for Variables Predicting Number of Friendships

Variable	Model 1			Model 2			Model 3			Model 4		
	B	*SE β*	*β*	*B*	*SE β*	*β*	*B*	*SE β*	*β*	*B*	*SE β*	*β*
Severe disabilities[a]	-.58	.22	-0.32*	-.54	.23	-0.30*	-.55	.23	-0.31*	-.47	.29	-0.26
Socio-behavioral disabilities[a]	-.36	.18	-0.26*	-.42	.18	-0.30*	-.42	.18	-0.30*	-.42	.18	-0.30*
Physical disabilities[a]	-.05	.21	-0.03	-.03	.21	-0.02	.06	.21	0.04	-.03	.21	-0.02
Gender				.34	.16	0.23*	.32	.17	0.22	.34	.17	0.24
Age				-.00	.01	-0.03	-.00	.01	-0.02	-.00	.01	-0.03
Severe disabilities x gender							.10	.46	0.03			
Socio-behav. disabilities x gender							.31	.46	0.09			
Physical disabilities x gender							.94	.43	0.27*			
Severe disabilities x age										-.01	.03	-0.08
Socio-behav. disabilities x age										-.00	.02	-0.01
Physical disabilities x age										-.02	.02	-0.08
R^2	.12			.17			.23			.18		
F for chance in R^2	3.06*			2.76*			2.43*			1.74		

Note. [a] Profile of reference is mild disabilities.
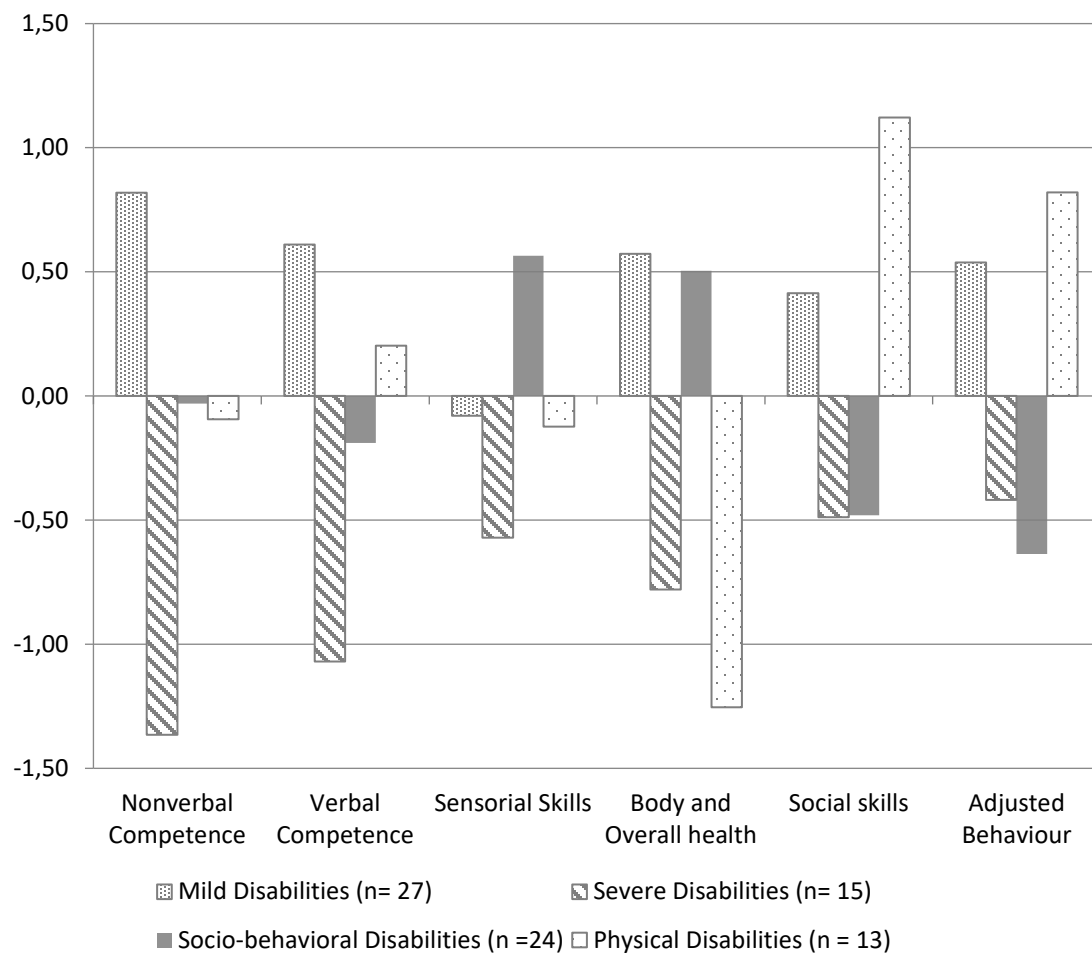
* $p < .05$.

Figure 1. (Dis)abilities profile based on hierarchical cluster analysis (Ward's method).