

What is the relationship between observations of peer interaction and teacher reports of prosocial behaviour and problem with peers in pre-schoolers?



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Preface

Working on this thesis has been very interesting. When I first started thinking of subjects for my thesis, I was interested in looking at certain aspects of the PCBOS, which is a fairly new observation instrument. I have used it plenty of times during my internship and was curious as to what the validity of the instrument was, as this has not been examined before. But further along the process, the plan of looking specifically at the validity of the instrument slowly faded. I had done some reading into the subject of measuring behaviour with different instruments and had experienced differences between observation outcomes and teacher reports myself during my internship. That way, the focus of the thesis shifted towards looking at the relation between different measures. I really enjoyed learning more about the subject and I have also learned a lot about SPSS, as everything I had learned about it in the previous years, had faded from my memory.

In the first place, I want to thank my thesis supervisor, Lex Wijnroks, for being as flexible as he was during my process of thesis writing. When I was not able to write the thesis in the first year of my master's degree, because of Pfeiffer's disease, he was very understanding. Making an appointment with him about discussing certain parts of the thesis was never a problem and after each appointment, I felt more confident about writing and finishing the thesis. I also want to thank my friends Laura de Jong and especially Doortje de Rooij, for the support they gave me, when sometimes finishing the thesis seemed like an impossible job. Last but not least, I want to thank my family for supporting me and showing interest in what I was doing, thereby subconsciously making me realize that I was more enthusiastic about writing a thesis, than I would sometimes think.

Abstract

While a lot of research has been done concerning peer interaction and its influence on development in preschool children, not much is known about the different ways of measuring peer interaction. This study used a clinical sample of 169 preschool children, to examine the relationship between observation measures and teacher reports of peer interaction. Results showed that observations of social behaviour, assertiveness and communication were significantly related to teacher ratings of problems with peers and prosocial behaviour of the child. Conflict was weakly, but significantly correlated with prosocial behaviour, but not related with problems with peers. Dutch language level was found to be related to assertiveness, communication and problems with peers, but it appeared not to be a moderating factor when looking at the relationships between the observation measures and the teacher reports. Future research should focus on finding other moderating factors in this relation.

Samenvatting

Hoewel er al veel onderzoek is gedaan naar interactie met leeftijdsgenoten en de invloed daarvan op de ontwikkeling van peuters, is er nog niet veel bekend over de verschillende manieren waarmee interactie met leeftijdsgenoten gemeten kan worden. Dit onderzoek gebruikte een klinische steekproef, bestaande uit 169 peuters, om de relatie te bepalen tussen observaties van interactie met leeftijdsgenoten en vragenlijsten ingevuld door de pedagogisch medewerker over interactie met leeftijdsgenoten. Uit de resultaten blijkt dat observaties van sociaal gedrag, assertiviteit en communicatie significant gerelateerd waren aan problemen met leeftijdsgenoten en prosociaal gedrag, zoals beoordeeld door de pedagogisch medewerker. Conflict was zwak, maar significant gecorreleerd met prosociaal gedrag, maar niet met problemen met leeftijdsgenoten. Het Nederlands taalniveau van het kind bleek gerelateerd te zijn aan assertiviteit, communicatie en problemen met leeftijdsgenoten. Het was echter geen modererende factor wanneer er gekeken werd naar de relaties tussen de observaties en vragenlijsten. Vervolgonderzoek moet zich richten op het vinden van andere modererende factoren in deze relatie.

What is the relation between observations of peer interaction and teacher reports of prosocial behaviour and problem with peers in pre-schoolers?

Preschool is viewed as a valuable way to facilitate the development of children, aiming to make them more equipped for elementary school (Reynolds, Temple, Robertson, & Mann, 2001). Peer interaction, which encompasses skill sets such as assertiveness and prosocial behaviour, seems to be an important component as it is linked to various developmental outcomes, including achievement in school (Gifford-Smith & Brownell, 2003). There is research for example, that shows that certain level of conflict is normal for children in the preschool age (Wakschlag et al., 2010). However, not much is known about how to measure peer interactions in the preschool and how these interactions and conflicts with peers relate to problems with peers or prosocial behaviour as rated by the preschool teachers. Is there for example a relationship between observed conflict and problems with peers as rated by the teacher? And what is the relationship between observed communication with other children and prosocial behaviour as rated by the teacher?

Currently, the main method of looking at the social behaviour of individual children in the classroom, is through teachers' reports (Bulotsky-Shearer, Fantuzzo, & McDermott, 2008; Hamre, Pianta, Downer, & Mashburn, 2008). While this can be a useful method to look at the social behaviour of children, Hamre et al. (2008) found that teachers' reports do not always reflect the actual problem behaviour displayed by children. In other words, assessments of behaviour by teachers, can differ from other measures of behaviour.

Observations allow for examining how children regulate their behaviour during interactions. They are more flexible and sensitive to the individual way in which children display their competence in a given context, while questionnaires make people judge the child on a certain domain of behaviour only (Meisels & Atkins-Burnett, 2006; Volpe, DiPerna, Hintze, & Shapiro, 2005). Direct observation procedures offer a powerful and useful methodology for improving assessment practices, leading to more effective intervention for teachers and children (Hintze, 2005). Spears, Tollefson, & Simpson (2001) even argue that observation is the most representative form of assessment for evaluating social communication skills. The past few years, most professionals have pled to focus more on observations in the natural environment, instead of individual, standardized situations when studying young children (Meisels & Atkins-Burnett, 2000).

Most researchers, however, agree that it is best to use a multi-method approach, using both questionnaires and observations, to draw valid conclusions about the behaviour of children. Observations can be of added value when collecting diagnostic data (Volpe et al., 2005), but only when observations are carefully examined on their psychometric properties and their ability to produce reliable and valid outcomes. Moreover, observers must be adequately trained and multiple observations should be performed within different settings (Hintze, 2005; Volpe et al., 2005).

Garte (2015) looked at intersubjectivity as a marker of social competence and used a new observation method to assess the degree of intersubjectivity seen in interaction between children. Her findings show that this observation method is reliable and valid for a low income preschool population at least, but no research has been done on a more heterogeneous population. Furthermore, this observation instrument only assesses a small part of the broader concept of peer interaction. Downer, Booren, Lima, Luckner, and Pianta (2009), also used a fairly new observational instrument; the Individualized Classroom Assessment Scoring System (inCLASS). In contrast to the observation measure used by Garte (2015), this observation method was used to look at the broader aspect of peer interaction such as communication with other peers, conflict with peers, and the level of assertiveness in interaction with peers. Preliminary findings indicate that the inCLASS has potential to provide an authentic, contextualized assessment of young children's classroom behaviours.

Peer interactions

Peer interaction can be divided into different aspects, such as peer sociability, peer assertiveness, peer communication and peer conflict (Booren, Downer, & Vitiello, 2012; Downer et al., 2010). The existing literature agrees upon the fact that good peer interaction skills in preschool lead to positive developmental outcomes. For example, prosocial behaviour is positively correlated with academic knowledge, classroom participation and executive function skills (Bierman, Torres, Domitrovich, Welsh, & Gest, 2009). Positive interactive play behaviour is associated with active engagement in classroom learning activities (Coolahan, Fantuzzo, Mendez, & McDermott, 2000) and children who have warm, positive relationships tend to have higher achievement, lower levels of internalizing behaviour and higher social competence than children with relationships characterized by conflict (Konold & Pianta, 2005). Fantuzzo, Bulotsky-Shearer, Fusco, and McWayne (2005) found that the ability to seek out and maintain positive peer relationships in early childhood is a primary indicator

of social competency. Also, children with at least one mutual friend are better liked by peers and are rated by teachers as being more socially competent than children with no mutual friend (Lindsey, 2002). Assertiveness seems to be a key dimension of healthy functioning with peers during early childhood (Kim, 2003). Gazelle and Faldowski (2014) found a positive relationship between peer exclusion and showing inhibited behaviour among familiar peers, but not unfamiliar peers. This may be an indicator that the experiences children have with their peers in the classroom, is a stronger predictor of inhibition with peers, than an inhibited temperament.

On the other hand, children with problems in peer interactions show greater social difficulties with peers after one year (Bulotsky-Shearer et al., 2008). Children with deficits in prosocial behaviour had poorer cognitive skills, lower vocabulary and non-verbal IQ scores, lower levels of classroom participation, less academic knowledge and lower executive function skills than children without deficits in prosocial skills (Bierman et al., 2009). Disconnection in play is related to inattention, passivity and lack of motivation. Children identified as disruptive players showed conduct problems and hyperactivity in the classroom (Coolahan et al., 2000). Also, children with limited social competence related to peers, appear to find it more difficult to develop friendships (Guralnick, Neville, Hammond, & Connor, 2007).

Language problems

Children with divergent types of language problems generally show more withdrawal, less prosocial behaviour, more problems with peers and are less liked by other children (Bretherton et al., 2014; Hart, Fujiki, Brinton, & Hart, 2004; Ketelaars, Cuperus, Jansonius, & Verhoeven, 2010). More severe language problems are associated with lower levels of prosocial behaviour and less likeability by other children. This might be because for many types of prosocial behaviours, language skills are necessary (Hart et al., 2004; Ketelaars et al., 2010). However, lower levels of language skills are more strongly associated with problems with peers for boys than for girls (Stowe, Arnold, & Ortiz, 1999).

Study aims and hypotheses

As there are many unfavourable outcomes for children having difficulties interacting with peers, it is important that peer interaction in preschool is carefully monitored. It appears that less than a third of the children with developmental problems are being traced before they go

to elementary school (Glascoe, 2005). Tracing these children is of great importance, as early intervention can reduce the problem behaviour at a later age (e.g. Dodge et al., 2015).

Though most research examined the relationship between peer interaction and behavioural problems, hardly any studies have looked at the relationship between observations and teacher reports of peer interactions. Also, most of the current research with preschool children has been conducted with a non-clinical sample. Working with a clinical sample is sometimes viewed as disadvantageous, as it is not a reflection of the general population. However, there are certain reasons why a clinical sample can be of added value. It is for example interesting to compare the results of research with a non-clinical sample to the results of this study, which uses a clinical sample. Also, the chance of finding relations between variables will be greater when working with children who express a more substantial degree of problem behaviours. It is important to shed some more light on this relation, to find the best possible way to examine peer interaction in pre-schoolers. It is also important to control for language skills, as these appear to have an influence on some aspects of peer interaction, too. Therefore, this study aims to find an answer to the following questions:

1. How are observations of aspects of peer interaction related to the prosocial behaviour and problems with peers rated by preschool teachers?
2. Do relations between observations of peer interaction and teacher ratings of prosocial behaviour and problems with peers, depend on children's language level?

The Strength and Difficulties Questionnaire (Goodman, 1997) was used for assessing the problems with peers and prosocial behaviour of the children as perceived by the preschool teacher. Language level was determined by using the subscale Communication of the Ages and Stages Questionnaire (Wijnroks & Idenburg, 2011). The validity and reliability of these two measures has already been determined. To assess observed peer interaction, a modified version of the inCLASS (Downer et al., 2010) was used. When the observation scores obtained from this measure were compared with teacher ratings, they found significant correlations. However, it should be noted that Downer et al. (2010) had a sample of primarily Caucasian normally developing children, from families with moderate income levels, attending mostly private preschools, while in this study, a heterogeneous group of children was used. All children were clinically referred for extra support because of language delays, behavioural problems and/or general developmental delays. It can therefore be expected that

correlations between variables might be stronger than in the study of Downer et al. (2010) because in heterogeneous samples more extreme scores can be expected .

Method

Participants

The sample consisted of 169 children. Their age ranged between 33 and 48 months ($M = 41.84$, $SD = 3.147$). For four children, no data of their age was available. More than 60% of the children were boys. For six children, no data was present of their gender. Complete data were available for only 154 children, as for the other children, not all three measures were completed. Children were selected by the pedagogical staff and the care consultant of their preschool, for participating in the project *PeuterPlus!*, which can be roughly translated into Toddler Plus. This project was developed by the University of Utrecht, commissioned by the city of Utrecht in 2010. The aim of the project is to reduce the behavioural and learning problems of preschool children before they go to kindergarten. Therefore, the sample consisted only of children with problem behaviour in one or more areas of functioning, such as externalising and internalising problems, but most children had language deficiencies. For every child, parental consent to participate in the project and use the data for research purposes, was obtained.

Procedures

After the children were signed up by the care consultant of the preschool, they were referred to an intern working for *PeuterPlus!*. All interns were studying for their master degree in special education. A meeting with the parents and the care consultant was planned, in which parents received information about the aim of project. They then were asked to sign a consent form, separately giving consent for using the data of the child (anonymously) for research purposes. All interns were required to attend a training session of one full day before observing live in the classroom (see Downer et al. (2010) for a full description of the training). One week after the meeting with the parents, observations of the child in the preschool classroom started. For each child, two days of observations was carried out, preferably on two consecutive days. One observation lasted an entire morning or afternoon, which is approximately two and a half hours, depending on the preschool schedule of the child. The child was observed throughout the day by the observer who wrote down the child's activities in different situations, such as free play. On the first day of the observation, the pedagogical staff was handed a questionnaire about the functioning of the child in the class,

which the staff completed within two weeks of the initial observation. A week after the observations, the intern examined the child in a separate room to determine the level of language development.

Measures

Pedagogical staff ratings of child's social problems with peers and its prosocial behaviour

The lead pedagogical staff member completed the *Strengths and Difficulties Questionnaire* (SDQ; Goodman, 1997). This short screening list looks at different areas of development of the child, i.e. emotional problems, behaviour problems, hyperactivity/attention deficit, problems with peers and pro-social behaviour. There are 25 items, with each item to be answered at a 3-point scale (*not true, a little true, definitely true*). In this study, only the domains 'problems with peers' and 'pro-social behaviour' were used. The average inter-rater reliability was considerably higher compared to scales of other questionnaires (Goedhart, Treffers, & van Widenfelt, 2003).

Level of language development

The level of language development was determined by using the scale 'communication' of an adjusted version of the *Ages and Stages Questionnaire* (ASQ; Wijnroks & Idenburg, 2011; based on Squires, Bricker, & Potter, 1997) In the adjusted version, the questions for parents were translated into directly observable tasks for the child. The child was given six short assignments, which depended upon the age of the child. The assignments were given verbally, without non-verbal help. The answers and reactions of the child were given points corresponding to the question if the child reacted accordingly; yes (10 points), possibly (5 points) or no (0 points). The total score was compared to the mean score of a reference group of typically developing children from the same age. Originally, the ASQ is a screening list for parents, measuring the general development of the child. This original ASQ appeared to be a reliable and valid instrument (Gollenberg, Lynch, Jackson, McGuinness, & Msall, 2009; Squires et al., 1997). In general, there seems to be a high agreement between parents and professionals (95% in Squires et al., 1997). Therefore, we assumed that the adjusted version of the ASQ used in this study, would be capable of determining the level of language development in young children.

Observation measures

The *Preschool Classroom Behavioral Observation System* (PCBOS; Wijnroks, 2013), was used to observe the peer interaction of the child in the classroom. This observational

instrument is based on the *Individualized Classroom Assessment Scoring System* (inCLASS; Downer et al., 2010). It comprises of nine dimensions: positive engagement with the teacher, teacher communication, teacher conflict, peer sociability, peer assertiveness, peer communication, peer conflict, engagement with tasks, and self-reliance (see Downer et al., 2010 for more information on how these dimensions were identified). Each observation cycle lasted 10-15 minutes, depending on the situation of observing. After a morning or afternoon of observing, the scores were calculated, according to the instructions of the PCBOS manual. First, observers determined if the observed behaviour fell within the High, Mid, or Low range for the dimension. They then read through a detailed description of the selected range (e.g. High) and used this to arrive at a final numerical score, by determining how well the description fit the observed behaviour of the child. The numerical scores range from 1 to 7, with 1 indicating that the observed behaviour of the child fits the Low-range description perfectly, and 7 indicating that the observed behaviour fits the High-range description perfectly. For more detailed information of how the scores were computed, see Downer et al. (2010).

For this study, only the scores on the dimensions peer sociability (the degree to which the child shows interest in, responds to and seeks contact with other children), peer assertiveness (the role of the child in the group; is the child viewed as a leader and does it stand up for itself, without being bossy or extort things), peer communication (does the child take initiative to talk to other children, have conversations and does the child use speech in different ways when in contact with other children) and peer conflict (negative contacts with other children, being aggressive, angry and/or seek attention in a negative way by taking things from other children without asking and pushing other children) were used. Data from each different situation in which the child was observed was added and an average score per dimension was calculated. Next, the scores of the two days of observing were added and averaged. This overall mean score per child was used in the data-analyses.

As it is a fairly new instrument, no data was available for the reliability and validity of the PCBOS yet.

Data-analyses

First, of the two days of observation, an average score per domain was calculated. When there was only data for one day of observation, this score was used. This was done for 35 children. All children with a missing score on one or more of the research instruments, were excluded

from analyses . After that, the sample used in the analyses consisted of 154 children. Because there was no data of the exact age at the time of the observation, the age group of the ASQ was used to get a general overview of the age of the children. For the SDQ, items 11 ('has at least one good friend') and 14 ('generally liked by other children') were recoded, in order to ensure that a high score on the domain 'problems with peers' referred to having a lot of problems with peers. The internal consistency of the domains 'prosocial behavior' and 'problems with peers' was moderate; respectively Cronbach's alpha is .745 and Cronbach's alpha is .612. The internal consistency of the four domains of the PCBOS was also moderate; Cronbach's alpha is .731. Only complete scores for the scale 'communication' of the ASQ were available, therefore it was not possible to compute the internal consistency for this scale. Correlations between the four domains of the PCBOS and the two domains of the SDQ were computed. Also, to find out if level of language was a moderating factor, a hierarchical multiple regression analyses was conducted.

Results

Correlations

To find whether or not there was a relation between the PCBOS and SDQ peer interaction domains, correlations were computed. Strong negative correlations were found between PCBOS Social behaviour, Assertiveness, Communication and SDQ Problems with peers (respectively $r = -.515$, $r = -.458$, $r = -.460$, all p 's $< .001$). No significant correlation was found between PCBOS Conflict and SDQ Problems with peers ($r = -.007$, $p = .932$). For SDQ Prosocial behaviour, a moderate positive significant correlation was found with PCBOS Social behaviour ($r = .363$, $p < .001$) and there was a weak positive significant correlation with PCBOS Assertiveness ($r = .284$, $p < .01$). For PCBOS Communication, there was a significant positive correlation, but this correlation is negligible ($r = .170$, $p < .05$). There was a weak negative significant correlation between PCBOS Conflict and SDQ Prosocial behaviour ($r = -.243$, $p < .01$).

It was expected that the gender of the child might affect the nature or strength of the correlations between the domains on the PCBOS and the SDQ. Therefore, correlations for each gender group were calculated separately, and these correlations were then compared with each other. To assess if the differences of the correlations between boys and girls were significant, a Fischer Z transformation was used. Table 1 presents these correlations. No

significant differences between these correlations were found; there appears to be no moderation-effect of gender.

Table 1

Correlations Between Peer Interaction Domains of the PCBOS and SDQ For Gender

	SDQ Problems with peers		SDQ Prosocial behaviour	
	Boys	Girls	Boys	Girls
PCBOS Social behaviour	-.466**	-.579**	.396**	.356**
PCBOS Assertiveness	-.475**	-.418**	.290**	.243
PCBOS Communication	-.454**	-.454**	.223*	.127
PCBOS Conflict	.001	-.025	-.258*	-.177

Note. * $p < .05$, ** $p < .01$

Influence of language level

To find out whether language level was of influence looking at the relationship between the observation measures and the teacher reports, correlations between language level and all other variables were computed. Table 2 presents these correlations.

Table 2

Correlations Between Domains of the PCBOS and SDQ and ASQ Language level

	ASQ Language level
PCBOS Social behaviour	.132
PCBOS Assertiveness	.211**
PCBOS Communication	.287**
PCBOS Conflict	.140
SDQ Problems with peers	-.170*
SDQ Prosocial behaviour	.121

Note. * $p < .05$, ** $p < .01$

Regression analysis

A hierarchical multiple regression analysis was conducted using both SDQ domains as dependent variable. In Step 1, language level as measured by the ASQ and one of the PCBOS domains was included. In Step 2, a newly computed variable (language level multiplied by each of the PCBOS domains) was included. See Table 2 and 3 for the results. To control for the multiple comparisons problem, the value of p was recalculated by dividing 0.5 by the number of tests, which is 8. For something to be significant, p should now be $(0.5/8)=.0625$. Language level did not appear to be a moderating factor in any of the relationships between the observation measures and the teacher reports.

Table 2

Hierarchical Multiple Regression Analysis Predicting Problems With Peers From Language Level and All Four Observation Domains

Predictor	R ²	B	Std. Error	Beta	t	Sig.
Model 1	.276					
Language level		-.137	.092	-.104	-1.483	.000
Social behaviour		-.910	.127	-.501	-7.175	.140
Model 2	.277					
Language level x social behaviour		-.034	.084	-.090	-0.403	.688
Model 1	.216					
Language level		-.101	.098	-.076	-1.032	.304
Assertiveness		-.712	.119	-.442	-5.999	.000
Model 2	.226					
Language level x assertiveness		.107	.077	.249	1.379	.170
Model 1	.213					
Language level		-.054	.100	-.041	-0.542	.589
Communication		-.753	.127	-.448	-5.950	.000
Model 2	.213					
Language level x communication		.007	.081	.014	0.088	.930
Model 1	.029					
Language level		-.288	.107	-.172	-2.125	.035
Conflict		.037	.176	.017	0.212	.832
Model 2	.029					
Language level x conflict		-.022	.136	-.031	-0.163	.871

Note. * $p < .05$, ** $p < .01$

Table 3

Hierarchical Multiple Regression Analysis Predicting Prosocial Behaviour From Language Level and All Four Observation Domains

Predictor	R ²	B	Std. Error	Beta	t	Sig.
Model 1	.137					
Language level		.113	.115	.075	0.980	.329
Social behaviour		.729	.158	.353	4.624	.000
Model 2	.138					
Language level x social behaviour		.052	.104	.121	0.497	.620
Model 1	.066					
Language level		.109	.121	.072	0.896	.372
Assertiveness		.426	.148	.232	2.889	.004
Model 2	.066					
Language level x assertiveness		-.014	.097	-.029	-0.145	.885
Model 1	.035					
Language level		.119	.126	.079	0.945	.346
Communication		.281	.160	.147	1.763	.080
Model 2	.036					
Language level x communication		-.044	.102	-.077	-0.428	.669
Model 1	.084					
Language level		.238	.119	.158	2.012	.046
Conflict		-.657	.195	-.265	-3.367	.001
Model 2	.084					
Language level x conflict		-.002	.150	-.002	-.011	.991

Note. * $p < .05$, ** $p < .01$

Conclusion & Discussion

While there is a lot of research looking at the relationship between peer interaction and problem behaviour in preschool children, less is known about the relation between observations measures and teacher reports of peer interaction. Also, earlier studies have been using non-clinical populations. Therefore, this study aimed to look at this relationship in a clinical population, because these relationships might be different in such groups. As language level was assumed to have influence on children's conflict with peers and prosocial behaviour, this study controlled for differences in language level.

Results showed that observed social behaviour, assertiveness and communication were negatively related with the problems with peers of the child, as rated by the teacher. Conflict with peers was not related to the problems with peers, as rated by the teacher. Observations of social behaviour was positively related to prosocial behaviour as rated by teachers, for conflict there was only a weak negative relationship with prosocial behaviour, for assertiveness there was a weak positive relationship and for communication, there was a significant but negligible relationship. The relationship between conflict and prosocial behaviour was small, but significant. Especially for a sample this size, this is promising. This is in accordance with the findings of Downer et al. (2010), who also found a weak, but significant correlation between the Peer interactions domains and social skills of the children as rated by the teacher. It means that children who showed conflicts with peers, are judged by their teachers as less prosocial. No differences between these relations were found for girls and boys.

Though at first sight it would seem surprising that there was no significant correlation between conflict and problems with peers, this can be explained taking into account the findings of Wakschlag et al. (2010). They found that a certain level of conflict with peers is normal in the preschool age. Therefore, children exhibiting a certain level of conflict, would not be rated as having problems with peers by the teachers, because they see the conflict as a normal part of development.

However, the lack of a relation between conflict and problems with peers, is in contrast to what Crick et al. (2006) found. They compared the aggressive behaviour of preschool children (which can be compared to the Conflict domain) to peer rejection (which can be compared to the Problems with peers domain) 4-6 months later and found that for girls, relational aggression towards peers predicted peer rejection and for boys physical aggression

towards peers predicted peer rejection. As Crick et al. (2006) used a non-clinical sample, it may explain the difference in associations between conflict and problems with peers in comparison to this study. However, this study did not make a distinction between relational and physical conflict. Perhaps, if this distinction was made, correlations between Conflict and Problems with peers would be found.

Another reason for not finding or finding only a weak relation between conflict and the two domains of the SDQ, could be the low scores on conflict ($M = 1.67$, $SD = 0.98$). This contrasts the research of Wakslag et al. (2010), saying that a certain level of conflict in preschool children is part of normal development. This effect could have occurred because the presence of the observers may have prevented some conflicts to happen, which could be a possible explanation for the floor effect in this study. Because there are practically no children who exhibited much conflict, it is difficult to find correlations. This is called the *floor effect*, and Juliano, Stetson Werner, & Wright Cassidy (2006), also found this effect. It limits the statistical power of the analyses.

Overall, the strongest correlations were found between observations of the social behaviour of the child, and the problems with peers and prosocial behaviour of the child as rated by the teacher. These correlations are relatively strong considering the fact that different informants were used (Hamre et al., 2008; Juliano et al., 2006). It is possible that teachers rate the behaviour of the children in a different way, because they have a longer window of observation than the few hours the observers see the child. In other words, teachers' ratings may have derived from general impressions of children.

Looking at relations between language level and the domains of the PCBOS and SDQ revealed that language level was related to assertiveness, communication and problems with peers. This finding is partly in accordance with other research; language problems were found to be of influence on problems with peers, but also on prosocial behaviour, which was not found in this study (Bretherton et al., 2014; Hart et al., 2004; Ketelaars et al., 2010).

Moreover, it was found that language level was not a moderating factor in any of the relationships when looking at the relationship between observation measures and teacher reports of peer interaction. Research explained that for prosocial behaviour, language skills were necessary (Hart et al., 2004; Ketelaars et al., 2010). However, language level in this study referred to the Dutch language level of the children, as scores were obtained through a verbal test. Children whose first language was for example Turkish and not Dutch, could

therefore score below average. However, for most children who participated in the PeuterPlus! Project, Dutch was not their first language. This means that they did not necessarily need the Dutch language to communicate with peers. Perhaps if the language level of the native language of the children was used as a control variable, language level would be related to prosocial behaviour too, and it would possibly be a moderating factor in these relationships.

Besides language problems, the sample in this study consisted of children with a broad spectrum of problem behaviours. Because of the heterogeneousness of the sample, the results of this study are suitable to be generalized to other clinical samples.

This study looked at correlations between observation measures of peer interaction and teacher ratings of problems with peers and prosocial behaviour. It looked at the difference in correlations for boys and girls. Downer et al. (2010) also found age differences when looking at the scores on peer interaction; older children were interacting more competently with peers. Perhaps other correlations were found if this study would also use different age groups. Also, for the scores of the PCBOS domains, average scores were calculated, resulting in any extreme scores to disappear. For further research of the PCBOS, it would perhaps be interesting to look at specific scores within the domains, instead of using an average score.

In conclusion, this study found significant relationships between observation measures and teacher reports regarding peer interaction. For conflict, there is only a weak relationship with prosocial behaviour, but no significant relationship with problems with peers. Language level does not seem to be a moderating factor for the relation between the observation measures and the teacher reports. Some of these results were consistent with other research, while other results contradict with previous research. It is important that future studies investigate different moderating factors in these relationships, for example age. It becomes clear that, to measure peer interaction in pre-schoolers, it is important to use different measures and informants.

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