Peer-Victimization of Young Children With Developmental and Behavioral Difficulties—A Population-Based Study

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Abstract

Objective The aim is to investigate if young children with developmental and behavioral difficulties (DBDs) have greater risk of peer-victimization compared with typically developing (TD) children. **Method** The sample was drawn from the Norwegian Mother and Child Cohort Study (MoBa). MoBa has collected population-based data on children's health and development for 114,500 children. We included children that were 5 years of age ($n = 41,609$). Multivariate logistic regression was used to estimate the effect of different DBDs and of co-occurring DBDs on peer-victimization compared with TD children. Categories of DBDs included autistic traits, emotional difficulties, behavioral difficulties, general learning difficulties, attention difficulties/impulsive behavior, motor development difficulties, language difficulties, and hearing and vision difficulties. Results were adjusted for socioeconomic status and the child's sex. **Results** Peer-victimization was 2.8% (933) among TD children, and 8.0% (615) among children with DBD. The highest risk of peer-victimization was found among children with autistic traits and children with five or more co-occurring DBDs (adjusted odds ratios [ORs] = 12.76; 95% confidence interval [CI] 8.64–18.84; $p \leq .001$) and 17.37 (95% CI 12.15–24.82; $p \leq .001$), respectively. The lowest risk was found among children with hearing and vision difficulties and children with only one DBD [adjusted ORs = 1.98 (95% CI 1.71–2.29; $p \leq .001$) and 1.95 (95% CI 1.70–2.22; $p \leq .001$)]. **Conclusion** Children with DBD have a substantially higher risk of peer-victimization compared with TD children. Peer-victimization varies with type of DBD and increases cumulatively by number of DBDs.

Key words: bullying; developmental delay; neurological disorders; peer-rejection; the Norwegian mother and child cohort study (MoBa).

Introduction

Bullying and peer-victimization are threats to children's health (Copeland, Wolke, Angold, & Costello, 2013; Zwierynska, Wolke, & Lereya, 2013). Although recent studies have advanced our knowledge of bullying for school-aged children, less is known

about early signs of bullying among children before entering school. However, there seems to be an agreement that bullying behavior occurs in early childhood years (Perren & Alsaker, 2006; Repo & Sajaniemi, 2015; Vlachou, Andreou, Botsoglou, & Didaskalou, 2011), and that vulnerable groups of children are

being targeted (Barker et al., 2008). Many children with developmental and behavioral difficulties (DBDs) receive medical, psychological or educational treatment for their difficulties. Social support is important for treatment adherence, and peer-victimization could threaten adherence among children with chronic illness (Janicke et al., 2009; Storch et al., 2006). It is therefore possible that peer-victimization hampers the treatment of many children with DBD, which could in turn increase the development of co-occurring DBDs.

For school-aged children with DBD, ADHD-related symptoms (Holmberg & Hjern, 2008), behavioral difficulties (Verlinden et al., 2015), child clumsiness (Bejerot, Plenty, Humble, & Humble, 2013), language difficulties (Durkin & Conti-Ramsden, 2010), and autistic traits (Schroeder, Cappadocia, Bebko, Pepler, & Weiss, 2014) are among the difficulties that have been linked to peer-victimization. However, most of these studies have investigated peer-victimization for limited types of DBD. Few studies have compared the risk of different categories or severity of DBDs. It is therefore unclear if type or extent of difficulty could explain why these children are more exposed to peer-victimization compared with their typically developing (TD) peers. Moreover, we lack knowledge about the additive effects of co-occurring DBDs on peer-victimization. One study from a similar context to ours (Sweden) indicates that the quantity of neurobiological difficulties may be more critical than the presence of a specific trait in predicting peer-victimization (Torn et al., 2015). Still, few studies have thoroughly investigated this.

Peer-victimization is found among children already from 3 to 5 years of age (Crick, Casas, & Ku, 1999). The prevalence of peer-victimization among these children shows great variability (Monks, Palermi, Ortega, & Costabile, 2011; Perren & Alsaker, 2006). This could be because of variation in assessment tools, and inconsistency in the bullying/peer-victimization definition used among researchers (Vlachou et al., 2011). Moreover, few studies assessing peer-victimization among young children have been population based. It is therefore still unclear how peer-victimization presents itself from a young age.

Previous studies has shown that children with behavioral, hyperactive/attention, and emotional difficulties are at risk of peer-victimization from an early age (Hanish et al., 2004; Perren, von Wyl, Stadelmann, Burgin, & von Klitzing, 2006; Verlinden et al., 2015). One explanation for this association could be that many of these children may not understand how to approach peers, which in turn could elicit negative responses, including peer-victimization (Hanish et al., 2004). Another explanation could be

that emotional and behavioral difficulties are results of peer-victimization. The bidirectional relationship between peer-victimization and these difficulties is still unclear.

Less research has been performed assessing the risk of peer-victimization for young children with DBDs, such as cognitive impairment, language difficulties, motor development difficulties, and sensory difficulties. Co-occurrence between different DBDs is common (Helland, Roysamb, Wang, & Gustavson, 2018; Wang, Lekhal, Aaro, & Schjolberg, 2014), but little is known about the early risk of children with co-occurring difficulties. Many of these children are immature and have communication difficulties. Consequently, they might be unable to recognize peer-victimization episodes and may struggle to tell adults about them. Peer-victimization incidents could therefore go undetected, electing negative behavior from the child, which again could be difficult for parents and health-care professionals to comprehend. More knowledge is important to fully understand the mechanisms that influence well-being and quality of life among these children.

In Norway, children have a right by law to attend formal childcare from around 1 year of age. As a result, 97% of all 3–5-year-old children are enrolled in early childhood education and care (ECEC) (Statistics Norway, 2018). ECEC are highly subsidized, and quality standards are relatively high (Zachrisson, Dearing, Lekhal, & Toppelberg, 2013). Inclusive pedagogic practice for children with DBD is highlighted in Norwegian ECEC and schools (Ministry of Education, 2011). Cross comparison of 40 countries showed that Scandinavians reported the lowest prevalence of school bullying (Craig et al., 2009). In Norway, measuring bullying among school children has been performed on a routine basis, and a focus on eliminating bullying has been politically prioritized (Roland, 2011). However, less focus is aimed at measuring and eliminating peer-victimization among children before entering school.

Bullying is a specific type of repeated aggression where the behavior is intended to harm, and there is an imbalance of power (Solberg & Olweus, 2003). Peer-victimization is a form of peer abuse in which a child is frequently the target of peer-aggression but does not necessarily include all formal aspects of the bullying definition (Kochenderfer & Ladd, 1996). Children <8 years of age may not fully understand and differentiate between bullying and aggression (Monks, & Smith, 2006). Owing to cognitive immaturity, it may be argued that imbalance of power, repeated aggression, and intention to harm could be difficult to assess for young children (Vlachou et al., 2011). The term “peer-victimization” is therefore preferred in our study.

In the current study, we tested three main hypotheses: first, children with DBDs will experience more peer-victimization compared with TD children. We included young children with autistic traits, emotional difficulties, behavioral difficulties, general learning difficulties, attention difficulties/impulsive behavior, motor development difficulties, language difficulties, and children with hearing and vision difficulties. Second, the prevalence of peer-victimization will vary among children with different kinds of DBDs. Third, the more co-occurring DBDs a child has, the higher the risk of peer-victimization. Research shows that low socioeconomic status (SES) is linked to bullying behavior, and that low parental education is linked specifically to peer-victimization (Jansen et al., 2012). In addition, boys are more often involved in bullying behavior compared with girls (Nordhagen, Nielsen, Stigum, & Kohler, 2005). In our study, we therefore preformed all analysis adjusted for parental income, fathers' education, mothers' education, and the child's sex.

Methods

Participants

We used data from the Norwegian Mother and Child Cohort Study (MoBa). MoBa is a prospective population-based cohort study conducted by the Norwegian Institute of Public Health (NIPH) (Magnus et al., 2016). Women pregnant in their first trimester were recruited from all over Norway during the years 1999–2008, and 41% of the invited women consented to participate. There were no exclusion criteria. Pregnancy and birth records from the Medical Birth Registry of Norway are linked to the MoBa database (Irgens, 2000). The cohort now includes 114,500 children and 95,000 mothers.

Information on health, lifestyle, and child development was collected through questionnaires at regular intervals during pregnancy and after birth. After birth, questionnaires were collected at age 6 months, 18 months, 3 years, 5 years, and 8 years of age. Attrition and dropout of participants increased as the children got older. For the present study, the sample contained 41,609 participants from when the child was 5 years of age, and 7,792 of these children had some form of DBD. The mean age of the children in our study was 5 years and 3 months at the time the questionnaire was returned to NIPH, and 95% had not yet turned 6 years of age. We used the ninth, quality-assured version of the data set released in 2016 (<http://www.fhi.no/moba-en>). All participants gave informed consent before the study started. The establishment and data collection in the Moba study has obtained a license from the Norwegian Data Protection Authority. In addition, the Norwegian Data Protection Authority has approved this study.

Measurements

Peer-victimization was measured for each child at age 5 years by mother's rating of the statement, "My child is teased/bullied by other children," in the past 2 months. Response categories were "never," "sometimes," or "often." Only 53 replies were given in the category "often," and we therefore dichotomized "sometimes" and "often" corresponding to "peer-victimization."

DBD was also measured for each child at age 5 years by the mother's ratings on the question, "Has the child now or ever had any of the following long-term diseases or health problems?" where mothers responded "Yes/No" in relation to a number of different DBDs (listed below). If the mother responded yes to any of the health problems, screening instruments at 5 years of age were used when available to confirm symptoms of DBDs. [Supplementary Appendix A](#) shows all items that have been included in the screening instruments.

"Autistic traits" was measured by mother's report that the child had autism spectrum disorder/autistic traits or Asperger syndrome. The Childhood Asperger Syndrome Test (CAST) (Scott, Baron-Cohen, Bolton, & Brayne, 2002) was available for only 36% of our respondents and could therefore not be used as a DBD validation criterion for autistic traits. However, 92% of mothers in the Autistic trait group with available CAST scores rated their child as being within the ~20th percentile (indicating symptoms of Autism). Thus, demonstrating good validity of the mother-reported item of autistic traits.

"Emotional difficulties" was measured by mother's report that the child had emotional difficulties such as being sad or anxious, in addition to scoring within the ~20th percentile (indicating difficulties) on five items from the "anxious/depressed" subscale from the Child Behavior Checklist (CBCL) (Achenbach & Ruffle, 2000). Cronbach's alpha in our study was 0.62. The predictive validity of CBCL has been demonstrated in a Norwegian context (Novik, 1999).

"Behavior difficulties" was measured by mother's report that the child had behavior problems such as being difficult or unruly, in addition to scoring within the ~20th percentile (indicating difficulties) on seven selected items assessing aggressive behavior from the CBCL. Cronbach's alpha in our study was 0.71.

"General learning difficulties" was measured by mother's report that the child had learning difficulties, a mental developmental delay, or a syndrome/suspicion of having a syndrome.

"Attention difficulties/impulsive behavior" was measured by mother's report that the child had attention problems/difficulties in concentrating or unusual restless/hyperactive/ADHD, in addition to scoring

within the ~20th percentile (indicating difficulties) on one or two of the following scales: (1) 12 selected items assessing inattention, hyperactivity/impulsivity from Conner's Parent Rating Scale-Revised, short form (Conners, Sitarenios, Parker, & Epstein, 1998) (Cronbach's alpha in our study = 0.88); (2) four selected items assessing attention difficulties from the CBCL (Cronbach's alpha in our study = 0.61).

"Motor developmental difficulties" was measured by mother's report that the child had cerebral palsy or delayed motor development/being clumsy, in addition to scoring within the ~20th percentile (indicating difficulties) on 10 selected items from the gross and fine motor skills subscales from the Child Development Inventory (Ireton, Thwing, & Currier, 1977). Cronbach's alpha in our study was 0.69.

"Language difficulties" was measured by mother's report that the child had delayed or deviant language development, in addition to scoring within the ~20th percentile (indicating difficulties) on one or more of the following three language difficulty scales at 5 years of age: (1) the six-item Ages and Stages Questionnaire (ASQ) communication subscale (Squires, Bricker, & Potter, 1997) (Cronbach's alpha in our study = 0.59); (2) 13 items from the Speech and Language Assessment Scale (Hadley & Rice, 1993) (Cronbach's alpha in our study = 0.96); (3) six items from the Children's Communication Checklist-2 short scale (CCC-2) (Norbury, Nash, Baird, & Bishop, 2004) (Cronbach's alpha in our study = 0.56). The predictive validity of ASQ and CCC-2 has been demonstrated in a Norwegian context (Helland, Biringer, Helland, & Heimann, 2009; Richter & Janson, 2007).

"Hearing and vision difficulties" was measured by mother's report that the child had hearing or vision difficulties, such as wearing an eyepatch or daily need for glasses.

Children with co-occurring DBDs were grouped according to the number of DBD groups they belonged to, ranging from one to eight. Children with five or more DBDs were merged into one group because of low numbers of children with more than five DBDs. This variable was coded as a categorical variable with five levels (1–5 DBDs).

Covariates included the child's sex and SES (the parents' level of education and income). The child's sex was retrieved from the Medical Birth Registry of Norway (Irgens, 2000). Parents' education and income were retrieved from the mother-reported questionnaire at 17 weeks of gestation. Six levels of education, including college and university levels, were assessed for parents' education. The levels were dichotomized into "lower" and "higher." For both parents, "lower education" corresponded to approximately the lowest 20% of the sample. The families' income level was originally assessed by seven levels of

income. These levels were transformed into categories of "lower" and "higher" income, and the "lower income" category corresponded to approximately the lowest 20% of the sample.

Previous research has shown that adolescents from low SES families in Norway, estimated to the lowest 20% of the population, showed increased risk of being involved in bullying compared with adolescents from families with higher SES (Bakken, Frøyland, & Sletten, 2016). A similar measure of low SES corresponding to approximately the lowest 20% of the sample was therefore chosen in our study.

Statistical Analysis

First, we performed logistic regression analysis to examine how each single DBD was related to peer-victimization, with the reference group of "no DBD." Each group of DBD without co-occurring DBDs was entered as a predictor, with peer-victimization as the dependent variable. Covariates were included in adjusted multivariate logistic regression analyses. The risk of peer-victimization when having only one DBD indicated the *unique* risk attributable to each single DBD in each DBD group.

Second, we performed logistic regression analysis where we included the DBD groups with their co-occurring DBDs as predictors, and peer-victimization was entered as the dependent variable. Similarly, covariates were included in adjusted multivariate logistic regression analyses. The risk of peer-victimization when co-occurring DBDs were included in the analysis was regarded as the *observed* risk of peer-victimization for the different DBD groups. We also examined if children with co-occurring DBDs, irrespective of type, showed increased risk of peer-victimization in separate analyses comparing increasing numbers of DBDs with the reference group of "no DBD." Covariates were included in adjusted multivariate logistic regression analyses.

Sensitivity analysis were performed for all observed DBD groups to investigate if the increased risk of peer-victimization applied differently for those who only experienced this "often." In addition, stratified analyses were performed for children with hearing and vision difficulties separately to investigate their individual risk. Last, descriptive analyses were performed to see if children who had emotional or behavioral difficulties and experienced peer-victimized at 5 years of age were reported to have had emotional or behavior difficulties measured with CBCL already at 3 years of age. For covariates, missing values were imputed at the item level with the expectation-maximization algorithm. All analyses were performed in SPSS version 23 (IBM, Armonk, New York).

Table 1. Descriptive Statistics for Gender, Income, Mothers (M) Education, Fathers (F) Education, and Peer-Victimization in the Different Observed DBD Groups (n) %

	Reference group (n = 33,817) 81.3%	Autistic traits (n = 135) 0.3%	Emotional difficulties (n = 588) 1.4%	Behavior difficulties (n = 652) 1.6%	General learning difficulties (n = 601) 1.4%	Attention difficulties/impulsive behavior (n = 1,241) 3.0%	Motor development difficulties (n = 842) 2.0%	Language difficulties (n = 2,177) 5.2%	Hearing and vision difficulties (n = 4,671) 11.2%
Boy/girl	(16,680) 49.4 (17,078) 50.6	(110) 81.5 (25) 18.5	(308) 52.5 (279) 47.5	(431) 66.3 (219) 33.7	(371) 61.7 (230) 38.3	(855) 68.9 (386) 31.1	(560) 66.7 (280) 33.3	(1509) 69.3 (667) 30.7	(2513) 53.9 (2153) 46.1
Low income	(5,827) 17.7 (7,605) 22.5	(27) 20.8 (45) 33.3	(144) 25.3 (149) 25.3	(133) 21.0 (191) 29.3	(127) 21.8 (184) 30.6	(313) 25.9 (461) 37.1	(164) 20.0 (228) 27.1	(435) 20.5 (674) 31.0	(863) 19.0 (1119) 24.0
Low education M	(9,512) 28.1 (933) 2.8	(52) 38.5 (39) 29.3	(183) 31.1 (124) 21.3	(247) 37.9 (136) 21.1	(215) 35.8 (100) 17.0	(515) 41.5 (216) 17.7	(279) 33.1 (133) 15.9	(795) 36.5 (236) 11.0	(1405) 30.1 (253) 5.5
Peer-victimization									

Note. M = mothers; F = fathers; DBD = developmental and behavioral difficulties. For both parents, “lower education” corresponded to the lowest ~20% of the sample. The “lower income” category corresponded to the lowest ~20% of the sample.

Results

Our results show that overall 3.8% (1,548) reported having experienced peer-victimization. Among TD children, 2.8% (933) reported such experiences. Among children with some form of DBD, 8.0% (615) reported to have experienced peer-victimization at 5 years of age.

For children exposed to peer-victimization, 39.7% had some form of DBD. For children that did not experience peer-victimization, only 17.9% had some form of DBD. Among children that experienced peer-victimization, 63.8% were boys (as opposed to 50.6% boys in the “no peer-victimization” group), 25.3% came from families with lower income (as opposed to 17.8% in the “no peer-victimization” group), 35.9% had fathers with lower education (as opposed to 28.6% in the “no peer-victimization” group), and 31.8% had mothers with lower education (as opposed to 22.7% in the “no peer-victimization” group). Of the total sample, 18.7% (7,792) reported that their child had some form of DBD at 5 years. [Supplementary Appendix B](#) shows the distribution in percentage of number of co-occurring DBDs (1–5 DBDs) within each DBD group. [Table 1](#) shows the distribution of sex, parental lower income, parental lower education, and peer-victimization by the different observed DBD groups.

[Figure 1](#) shows the adjusted odds ratios (ORs) of peer-victimization for children with only one DBD within the different DBD groups. This indicates the unique effect from each single DBD. [Figure 1](#) also shows the adjusted ORs (ORadj) of peer-victimization when co-occurring DBDs were included, giving the observed risk, which represents the risk that a caregiver might perceive.

All DBD groups showed increased risk of peer-victimization compared with TD children. Our results show that the unique risk of peer-victimization linked specifically to either emotional difficulties or behavioral difficulties was highest for our single DBD groups. There were six children with autistic traits only (without co-occurring DBDs), so this group was excluded from the analyses of unique effects. Our results show that the observed risk of peer-victimization varies considerably with type of DBD. Children with autistic traits had the highest observed risk of peer-victimization of all the DBD groups (ORadj = 12.76; 95% confidence interval, (CI) 8.64–18.84, $p \leq .001$). Children with hearing and vision difficulties had the lowest risk (unique ORadj = 1.24; 95% CI 1.02–1.51, $p = .030$) (observed ORadj = 1.98; 95% CI 1.71–2.29, $p \leq .001$) but still displayed an increased risk compared with TD children.

These results are followed by increased risk of peer-victimization (unique ORadj and observed ORadj, respectively) for children with emotional difficulties

Figure 1. Logistic regression of peer-victimization for children with developmental and behavioral difficulties (DBDs) with observed and unique risk, relative to typically developing children, adjusted for sex and socioeconomic status. Autistic traits without co-occurring DBDs (unique risk) were excluded from the analysis because only six children were included in this category. Odds ratio (OR) and 95% confidence intervals (CIs). * $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$.

(OR_{adj} = 5.82; 95% CI 4.10–8.27, $p \leq .001$) (OR_{adj} = 8.97; 95% CI 7.23–11.13 $p \leq .001$), behavior difficulties (OR_{adj} = 5.81; 95% CI 3.98–8.46, $p \leq .001$) (OR_{adj} = 8.17; 95% CI 6.63–10.06 $p \leq .001$), general learning difficulties (OR_{adj} = 2.26; 95% CI 1.10–4.66 $p = .027$) (OR_{adj} = 6.61; 95% CI 5.25–8.33 $p \leq .001$), attention difficulties/impulsive behavior (OR_{adj} = 3.04; 95% CI 2.11–4.38 $p \leq .001$) (OR_{adj} = 6.37; 95% CI 5.39–7.53 $p \leq .001$), motor development difficulties (OR_{adj} = 2.87; 95% CI 1.71–4.81 $p \leq .001$) (OR_{adj} = 6.08; 95% CI 4.97–7.44 $p \leq .001$), and language difficulties (OR_{adj} = 1.98; 95% CI 1.51–2.59 $p \leq .001$) (OR_{adj} = 3.80; 95% CI 3.25–4.44 $p \leq .001$).

We performed separate crude analyses for all observed DBD groups where we assessed the risk of experiencing peer-victimization “often,” as opposed to no peer-victimization. These findings showed increased risk for all DBD groups compared with TD children, except for children with hearing and vision difficulties. However, few respondents in the “often” category resulted in large CIs (results not shown).

We also performed separate analyses for children with hearing difficulties and children with vision difficulties for their observed risk of peer-victimization. These analyses showed similar risk for children with

vision difficulties (OR_{adj} = 2.16; 95% CI 1.77–2.64, $p \leq .001$) and children with hearing difficulties (OR_{adj} = 1.96; 95% CI 1.64–2.35, $p \leq .001$).

Emotional difficulties, behavior difficulties, and attention difficulties/impulsive behavior could be consequences of peer-victimization. We therefore looked at how many of the children with these difficulties who experienced peer-victimization at age 5 years also had emotional, behavior, or attention difficulties reported at age 3 years. The results showed that 47.4% of the children with emotional difficulties, 72.6% with behavior difficulties, and 66.5% with attention difficulties/impulsive behavior who experienced peer-victimization at age 5 years had similar difficulties at age 3 years. This suggests that for some children, emotional and behavioral difficulties at age 5 years could be consequences of peer-victimization, but for others, these difficulties were observable from an early age and could make these children more prone to peer-victimization.

Supplementary Appendix C shows the distribution of sex, parental lower income, parental lower education, and peer-victimization by each group of children with co-occurring DBDs. Figure 2 shows the adjusted ORs for children with co-occurring DBDs of experiencing peer-victimization compared with TD

Figure 2. Logistic regression of peer-victimization as a function of the number of co-occurring developmental and behavioral difficulties (DBDs), relative to typically developing children, adjusted for child sex and socioeconomic status. Odds ratio (OR) and 95% confidence intervals (CIs). All ORs were significant at $p \leq .001$ level.

children. The risk increased cumulatively with the number of co-occurring DBDs. Children with only one DBD, irrespective of type, had a twofold greater risk of peer-victimization compared with TD children ($OR_{adj} = 1.95$; 95% CI: 1.70–2.22, $p \leq .001$). These results are followed by increased risk of peer-victimization for children with two co-occurring DBDs ($OR_{adj} = 4.33$; 95% CI 3.58–5.24, $p \leq .001$), three co-occurring DBDs ($OR_{adj} = 5.29$; 95% CI: 3.87–7.24, $p \leq .001$), four co-occurring DBDs ($OR_{adj} = 10.02$; 95% CI: 7.06–14.22, $p \leq .001$), and five or more co-occurring DBDs ($OR_{adj} = 17.37$; 95% CI: 12.15–24.82, $p \leq .001$).

Discussion

Our study is among the first to investigate in a large population sample to what degree young children with a wide range of DBDs are at increased risk of peer-victimization. First, we found an increased risk of peer-victimization among all DBD groups compared with their TD peers. Second, we found that the risk of peer-victimization varies with type of DBD. Third, we found that the more co-occurring DBDs a child has, the higher the risk of peer-victimization.

Our findings extend current knowledge in several ways. Although studies have advanced our knowledge of how behavior difficulties, attention difficulties/impulsive behavior, and emotional difficulties could be early predictors of peer-victimization (Barker et al., 2008; Perren et al., 2006; Verlinden et al., 2015), less is known about the risk of peer-victimizing for

additional categories of DBDs. While increased prevalence of peer-victimization has been established for schoolchildren and adolescents within a variety of DBDs in several studies (Kloosterman, Kelley, Craig, Parker, & Javier, 2013; Pinquart, 2017; Schroeder et al., 2014; Torn et al., 2015; Twyman et al., 2010), this has not been thoroughly investigated among children in early childhood years. Our results are consistent with previous studies finding that young children with special needs (Repo & Sajaniemi, 2015) and early onset mental disorders (Belden, Gaffrey, & Luby, 2012) are overrepresented in bullying situations compared with TD children. However, the former study did not differentiate between different kinds of special needs, and the latter study excluded children with neurological problems, language difficulties, and cognitive delays. Our results show that young children with a wide range of DBDs, with and without co-occurring DBDs, are at increased risk of peer-victimization.

Interestingly, we found that the unique risk of peer-victimization linked specifically to either emotional difficulties or behavioral difficulties was highest for our single DBD groups. Previous studies have found aggressive behavior to be a clear predictor of peer-victimization for young children (Barker et al., 2008; Hanish et al., 2004). However, these studies have not found similar associations between early emotional difficulties and peer-victimization. This stands in some contrast to our findings, which show that children with emotional difficulties have a high risk of peer-victimization. The association between poor peer-

relations and psychological problems is thought to be reciprocal (Hay, Payne, & Chadwick, 2004), and previous research has found that peer-victimization is linked to later emotional difficulties among schoolchildren (Wolke, Baumann, Strauss, Johnson, & Marlow, 2015; Zwierynska et al., 2013). Thus, the high risk of peer-victimization for children with emotional difficulties found in our study could reflect early symptoms of being exposed to peer-victimization. Our results show that only every second child with emotional difficulties who experienced peer-victimization at the age of 5 years had similar difficulties at the age of 3 years. This suggests that for some children, emotional difficulties could be consequences of peer-victimization.

Among children with autistic traits, the observed risk of peer-victimization was 13 times higher than for TD children, the highest risk among our DBD groups. This finding is consistent with previous studies in which both young children and adolescents with autistic traits have been identified as particularly vulnerable to experience peer-victimization (Hebron, Oldfield, & Humphrey, 2017; Kloosterman et al., 2013; Schroeder et al., 2014). One key explanation for the increased risk of peer-victimization could be lack of social skills, specifically “theory of mind” deficits often found among these children. Theory of mind deficits can result in difficulties understanding playmates motivation and reasons for behavior, which in turn could influence the ability to understand social cues and increase the risk of ostracism and peer-victimization (Schroeder et al., 2014). Research shows that social problems are evident already in preschool years for children with autism (Chawarska, Klin, Paul, & Volkmar, 2007).

Although children with hearing and vision difficulties have the lowest risk of peer-victimization compared with the other DBD groups, they still have a twofold higher observed risk compared with TD children. Previous research finds associations between peer-victimization and school children with mild vision difficulties, like wearing glasses or having an eye patch (Horwood, Waylen, Herrick, Williams, & Wolke, 2005). Interestingly, increased risk of peer-victimization for blind children compared with children with less severe vision difficulties was not found (Pinquart & Pfeiffer, 2011). In addition, degree of hearing loss did not predict psychosocial problems among preschool children with hearing difficulties (Laugen, Jacobsen, Rieffe, & Wichstrom, 2016). These findings highlight the importance of acknowledging the risk of peer-victimization for children with mild DBDs.

Our results show a high prevalence of co-occurring DBDs for many of our DBD groups. This finding is consistent with research showing that many children

with DBD have stable co-occurring DBDs from an early age (Helland et al., 2018; Wang et al., 2014). Furthermore, research suggests that peer-victimization takes place especially in combination with co-occurring DBDs for schoolchildren with DBD (Torn et al., 2015; Zablotsky, Bradshaw, Anderson, & Law, 2014). Overall, our findings show that the risk of peer-victimization increases cumulatively with the number of co-occurring DBDs. This association is consistent with the cumulative risk model, where the amount of risks is more important than a particular kind of risk in predicting the outcome (Hebron et al., 2017). Another explanation could be that the number of co-occurring DBDs is closely related to the nature of the DBD, thus making it hard to differentiate between them. For instance, our results show that children with autistic traits have the highest observed risk of peer-victimization and the most co-occurring DBDs. Conversely, children with hearing and vision difficulties have the lowest observed risk of peer-victimization and the fewest co-occurring DBDs. However, our results also show that the risk of peer-victimization varies according to the nature of the DBD. Many children with behavioral and emotional difficulties report having only one DBD but still have a high risk of experiencing peer-victimization.

Although previous studies show that both sex and SES predict peer-victimization among children (Jansen et al., 2012; Nordhagen et al., 2005), research also finds that SES provides relatively little information as to whom might be involved in peer-victimization (Tippett & Wolke, 2014). The latter finding resembles our results, which show that after controlling for SES and sex, the risk of peer-victimization among children with DBDs remained considerably higher than for TD children. A meta-analysis assessing bullying and SES finds more bullying in societies with socioeconomic inequality, where it might be more accepted to get ahead among children by bullying peers (Tippett & Wolke, 2014). Moreover, research indicates that Norwegian ECEC acts as a buffer against the development of emotional difficulties for families with low income (Zachrisson & Dearing, 2015). The political strive for socioeconomic equality in Norway has led to childcare and preschools of relatively homogenous quality accessible to all children (Zachrisson et al., 2013). It is likely that many of the children in our study are enrolled in ECEC. These findings could therefore partly explain the small effect of adjusting for SES on peer-victimization found in our study.

Strengths and Limitations

The present study has several strengths. Our study measures peer-victimization among young children with DBD, which is an understudied topic. In addition, our study is a population-based study with a

large number of participants, enabling comparisons of several different DBDs, with and without co-occurring DBDs. There are some limitations to the study as well. The children's DBDs were measured through maternal assessment, not a psychological or psychiatric evaluation. Such an evaluation could have given a more accurate assessment of the child's condition. Although mothers have been found to give reliable evaluations of their children's development (Squires et al., 1997) and of peer-victimization for children with DBDs (Kloosterman et al., 2013), the results may be biased by the mothers' assessing both peer-victimization and their child's DBDs. In addition, parents' education and income were retrieved from the mother-reported questionnaire at 17 weeks of gestation. Although SES is considered quite stable, potential changes after time of measurement could produce a different association to peer-victimization at 5 years of age.

In this study, we merged response categories "sometimes" and "often" exposed to peer-victimization into one category in the main analyses to increase statistical power because of few responses in the "often" category. Sensitivity analyses showed similar effect estimates analyzing "often" as the outcome measure suggesting children with DBDs are not only at increased risk for victimization "sometimes" but also "often." However, the mothers' report on peer-victimization was obtained by only one item. Mothers were not presented with a definition before answering, which means that peer-victimization could be interpreted differently and more widely among the participants than it is commonly defined in the scientific literature. On the other hand, underreporting of peer-victimization could have been a concern with a more specific definition excluding for example peer-victimization without clear intent to harm. In addition, children with DBDs can be prone to read social situations wrongly, thus reporting actions of peer-victimization to adults when they are not. It could be argued that children with DBDs and their mothers are more sensitive to peer-victimization than TD children. However, research find little difference between self-reported bullying assessed by school children with DBDs, and bullying reported by these children's teachers and parents (Pinquart, 2017), thus indicating a similar understanding of the situation.

As with most population-based longitudinal studies, MoBa is vulnerable to selective attrition. Possible self-selection bias in MoBa has been studied on demographic variables, health-related variables, pregnancy-related variables, and birth-related variables. MoBa participants were on average older, less likely to be single, had fewer health-related risks, and their children had better neonatal health than children of those not participating (Nilsen et al., 2009). This means that the participants in our study are likely to have higher SES,

and the children could have less DBDs compared with the Norwegian population. Despite the differences between the sample and the population, the association between risk exposure and child development outcomes was not significantly different when MoBa participants were compared with the general population of Norwegian mothers (Nilsen et al., 2009). However, higher SES in our sample could underestimate the effect of low SES on peer-victimization.

Furthermore, our analyses are mainly cross-sectional, so it is unclear to what extent the different DBDs and co-occurring DBDs do in fact cause peer-victimization. However, most of the DBDs included in our study are unlikely to have developed because of peer-victimization. Still, difficulties like emotional, behavioral and attention difficulties have been found to be both predictors and consequences of peer-victimization (Arseneault, Bowes, & Shakoor, 2010; Stenseng, Belsky, Skalicka, & Wichstrom, 2016). In line with this, we could establish that one half to two-thirds of children with these difficulties had similar problems at age 3 years.

Many children with DBDs, like children with general learning difficulties and children with autistic traits, show extensive diversity of difficulties. Thus, a precise range of impairment was difficult to assess. In addition, we were unable to differentiate between severe and mild difficulties for children with hearing and vision difficulties. This made it difficult for us to give precise assessment of which DBDs and which associated symptoms increased the risk of peer-victimization. Finally, some of the DBD groups had few respondents resulting in large CIs. Point estimates must therefore be interpreted with caution considering the full range of the CI.

Conclusion and Implications

We have found significant and partly large differences between children with and without DBDs and their risk of peer-victimization in early childhood years. We also found substantial differences among children in their risk of peer-victimization according to the nature of their DBDs and number of co-occurring DBDs. Pediatricians are encouraged to use their skills and influence in both clinical practice and advocacy to prevent bullying (Committee on Injury & Poison, 2009). Our results may assist pediatric psychologists in early identifying peer-victimization among young children with DBDs. Peer-victimization could be early stages of school bullying. Early detection and prevention of peer-victimization could diminish harmful consequences and ensure well-being and quality of life among children with DBDs during important childhood years. Future research should further explore the bidirectional relationship between peer-victimization and DBDs for young children. This could give us a better

understanding of why these children are more exposed to peer-victimization, and to what extent co-occurring DBDs develop as a result of peer-victimization.

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Supplementary Data

Supplementary data can be found at: <https://academic.oup.com/jpepsy>.

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