

Bidirectional relations between peer victimization and children's symptoms of
oppositional defiant disorder

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Forord

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Sammendrag

Mobbing er et utbredt fenomen som har negative konsekvenser for barns fysiske og mentale helse. Opposisjonell atferdsforstyrrelse (ODD) er en av de mest vanlige psykiske lidelsene blant barn og unge og noen studier viser at det er en sammenheng mellom mobbing og symptomer på ODD. Det kryss-seksjonelle designet på disse studiene gjør imidlertid at man ikke har kunnskap om de kausale sammenhengene: fører mobbing til økning i ODD-symptomer og/eller øker ODD-symptomer risikoen for mobbing? Slik kunnskap er viktig med tanke på å hindre utvikling eller forverring av ODD-symptomer og for å identifisere potensielle konsekvenser av ODD. Hensikten med denne studien var derfor å teste hvorvidt det er en gjensidig relasjon mellom mobbing og barns symptomer på ODD i et stort utvalg av 6-åringer (N = 790) som ble fulgt opp to år etter. Barnas symptomer på ODD ble kartlagt ved hjelp av et (foreldrebasert) semi-strukturert psykiatrisk intervju ("The Preschool Age Psychiatric Assessment interview" (PAPA)). Mobbing ble kartlagt ved hjelp av seks spørsmål fra det lærer-rapporterte spørreskjemaet "The Revised Olweus Victimization Scale". Strukturell ligningsmodellering i Mplus ble brukt for å analysere data. Resultatene viste at symptomer på ODD ved 6 år verken predikerte direkte (eks "Han/hun ble fysisk mobbet av andre") eller indirekte (eks "Han/hun ble ignorert av andre") mobbing to år senere. Derimot fant jeg at mobbing ved 6 års alder predikerte symptomer på ODD ved 8 år, justert for nivå av ODD-symptomer ved 6 års alder. Subgruppe-analyser viste at indirekte mobbing prospektivt predikerte ODD-symptomer blant gutter. For jenter var denne relasjonen ikke signifikant. Direkte mobbing predikerte ikke ODD-symptomer to år senere hverken for gutter eller jenter. Selv om nivået av symptomer på ODD var ulikt for jenter og gutter, fant vi ikke evidens for at den prospektive relasjonen mellom symptomer på ODD og mobbing er avhengig av kjønn.

Abstract

Peer victimization has repeatedly been shown to negatively affect children's physical and mental health. Oppositional defiant disorder (ODD) is among the most common childhood psychiatric disorders and research shows that there is an association between victimization and symptoms of ODD. However, because of the cross-sectional design of these studies the direction of influence is unknown: Does victimization cause an increase in ODD symptoms and/or does ODD symptoms increase the risk of victimization? Identifying factors that can increase the risk for ODD or constitute consequences of ODD is important in order to inform prevention and treatment. The purpose of this study was therefore to test if there is a bidirectional relation between victimization and children's symptoms of ODD in a large sample of 6 year olds (N=790) who were followed up two years later. Children's ODD symptoms were assessed by the Preschool Age Psychiatric Assessment interview (PAPA) when children were 6 and 8 years old respectively. Six items from the teacher reported questionnaire "The Revised Olweus Victimization Scale" measured victimization. The data were analysed using structural equation model in Mplus. The results showed that symptoms of ODD at age 6 predicted neither direct (e.g. "He/she was ignored by other children") nor indirect (e.g. "He/she was ignored by other children") victimization two years later. With regard to the opposite direction of influence, I found that victimization at age 6 predicted ODD symptoms at age 8, over and above children's initial level of ODD symptoms. Subgroup analyses revealed that indirect victimization prospectively predicted ODD symptoms in boys, whereas this path was not significant for girls. Direct victimization did not predict ODD symptoms two years later neither for boys nor girls. In the current study the prospective relation between ODD symptoms and victimization was not gender dependent.

Keywords: oppositional defiant disorder, indirect victimization, direct victimization, bidirectional relations, longitudinal.

It has been estimated that at any given time about 5-15 percent of school children are victims of bullying carried out by peers (Nansel, Craig, Overpeck, Saluja, & Ruan, 2004). Peer victimization seems to be stable over time (Boulton & Underwood, 1992; Camodeca, Goossens, Meerum Terwogt, & Schuengel, 2002) and is found across different ethnicities (Hanish & Guerra, 2000a). Recent Meta-analytic research has demonstrated adverse effects of victimization on mental health, showing that victimization predicts both externalizing and internalizing problems (Reijntjes et al., 2011; Reijntjes, Kamphuis, Prinzie, & Telch, 2010). Further, a meta-analytic study indicates that children and adolescents who experience victimization are at least two times more likely than nonbullied peers to experience psychosomatic problems, such as headaches, abdominal pain, tense muscles and sleep problems (Gini & Pozzoli, 2009). Peer victimization is also a risk factor for school adjustment problems (Buhs, Ladd, & Herald, 2006; Gastic, 2008; Kochenderfer & Ladd, 1996). A meta-analysis of 33 studies by Nakamoto and Schwartz (2010) showed a negative correlation between peer victimization and academic achievements, and studies have also showed that victimized children avoid school more than children who are not being victimized (Buhs et al., 2006; Gastic, 2008; Kochenderfer & Ladd, 1996).

The majority of research on mental health has examined internalizing problems, but during the last couple of decades, a growing body of research on the relationship between victimization and externalizing problems has emerged. Studies show that victimization predicts subsequent increases in aggression (Cooley & Fite, 2015; Kochenderfer-Ladd, 2004; Rudolph, Troop-Gordon, Hessel, & Schmidt, 2011) and violence (Ttofi, Farrington, & Lösel, 2012), behaviors that seem to make children more prone to further victimization (Hanish & Guerra, 2000a; Hodges, Boivin, Vitaro, & Bukowski, 1999). In line with this, a recent meta-analytic study indicates that victimization is both a consequence and an antecedent of externalizing problems (Reijntjes et al., 2011). The majority of studies have assessed

externalizing problems using checklist measures, which gives limited specificity of information regarding context, onset, duration and severity of the externalizing behavior (Egger & Angold, 2004). It is therefore not known whether bullying also increases the risk for diagnostically defined behavior problems such as oppositional defiant disorder (ODD). To my knowledge no longitudinal study has examined the effect of bullying on ODD. As suggested by the above noted meta-analysis there is also reason to believe that externalizing behavior, such as symptoms of ODD, may forecast victimization: behavioral problems seem to have a negative effect on children's development of social skills (Burt & Roisman, 2010; Chen, Huang, Chang, Wang, & Li, 2010; Keane & Calkins, 2004), which further seem to increase the risk for victimization (Dhimi, Hoglund, Leadbeater, & Boone, 2005; Egan & Perry, 1998). In contrast to such assumption Verlinden et al. (2015) found that symptoms of ODD at preschool age did not increase the risk of being victimized the first year of school. Because this is the only longitudinal study that have examined the prospective relation between ODD symptoms and victimization, it is not known if this also apply middle childhood. Given the psychological consequences of victimization, identifying children at particular risk for victimization is important. If it turns out that children with ODD are at increased risk for being victimized, particular attention should be paid to reduce and prevent victimization in children with ODD. ODD is among the most common childhood disorders (see Egger & Angold, 2006; Ford, Goodman, & Meltzer, 2003) and is associated with social impairment, which makes it important to examine whether this disorder might cause an increase in children's experiences of victimization. Many school-based interventions aimed at preventing and reducing bullying have shown limited effect (Vreeman & Carroll, 2007). Targeted interventions, which aim to alter specific risk factors, or alternatively modify their impact on victimization, might lead to greater success in reducing victimization.

In addition to the limited research on ODD as a risk factor for victimization, no study has tested the potential reciprocal relation between ODD and victimization. Given the high prevalence (Egger & Angold, 2006; Ford et al., 2003) and persistence of ODD (Nock, Kazdin, Hiripi, & Kessler, 2007) it is important to illuminate risk factors that make children prone to develop this disorder. It has been estimated that about 30 % of children with the disorder continues to report symptoms into adulthood (Nock et al., 2007). Studies further show that ODD predicts several comorbid disorders (Burke, Hipwell, & Loeber, 2010; Burke, Loeber, Lahey, & Rathouz, 2005; Lavigne et al., 2001; Nock et al., 2007) and it seems that ODD is often temporally primary to these disorders (Nock et al., 2007). Further, because victimization might impair mental health and increase externalizing problems, it is reasonable to assume that victimization can contribute to an increase in already existing ODD symptoms as well, and thus worsen the child's condition utterly. ODD is also associated with social impairment and with poorer academic performances in school (Greene et al., 2002). These studies underline the need for better knowledge about antecedents of ODD. Uncovering factors that affect the development of ODD will provide useful information to clinicians, which will give them the opportunity to reveal children in risk of developing ODD at an earlier stage and might further help them to give the children a better treatment.

Children who are targets of victimization may experience different consequences of victimization on mental health depending on the type of bullying they are exposed to. Lundh et al. (2014) report that few longitudinal studies have examined whether direct (e.g. He/she was ignored by other children) and indirect (e.g. He/she was ignored by other children) victimization differ in their relations with externalizing problems. Due to the lack of studies examining the relation between different types of victimization and symptoms of ODD, possible gender differences in this relation are also not clear. In order to precisely address victimization and its consequences, we need to identify the specific links between different

forms of victimization and different kinds of mental health problems, and also possible gender differences in this relation. I will therefore examine whether boys and girls experience different effects of indirect and direct victimization in regard to symptoms of ODD.

In summary, although there is a large body of research on victimization and mental health problems, there is a gap in knowledge with regard to 1) the prospective relation between symptoms of ODD, which is one of the most prevalent childhood psychiatric disorder and associated with increased risk of social impairment, and subsequent victimization in children and 2) the potential bidirectional relationship between victimization and symptoms of ODD, 3) whether different types of victimization are differently related to symptoms of ODD, and 4) potential gender differences in these relationships. The current study therefore aims to test the reciprocal relationships between different types of victimization and ODD symptoms from the age of six to eight years in a large and representative sample of children. Gender differences and the effect of different types of victimization are explored.

Peer victimization and mental health

Peer victimization can be defined as being target of peer abuse, whereas bullying or peer aggression is recurring and intentional peer abuse, where the perpetrator is in a position of greater power than the target (Olweus, 1991; Salmivalli, Kaukiainen, Kaistaniemi, & Lagerspetz, 1999). Although the term “bullying” sometimes is used in studies examining both the perpetrators and the victims of peer abuse, in the present inquiry the concept “victimization” is applied to describe children that are victims of peer abuse exclusively.

Peer victimization can elicit different types of reactions in children. As noted, victimization predicts both internalizing and externalizing problems. Troop-Gordon and Ladd (2005) report that children’s perceptions of themselves and their peers mediates the associations between victimization and later mental health problems. In response to social

experiences children modify their perception of themselves and their peers, which further predicts changes in their mental health. The experience of victimization may impair the target's sense of self-esteem, due to an internal attribution of blame, and thereby cause depressive symptoms (Graham & Juvonen, 1998; Troop-Gordon & Ladd, 2005). Others may experience a feeling of anger in response to victimization and thereby respond with externalizing behavior, such as physical or verbal aggression, to retaliate the victimization (Kochenderfer-Ladd, 2004). In this way peer victimization may increase externalizing problems in children.

According to recent meta-analytic research internalizing and externalizing problems do not only seem to be a consequence, but also a risk factor for victimization (Reijntjes et al., 2011; Reijntjes et al., 2010): Children who are depressed, anxious or aggressive seem to be more likely to experience victimization compared to others. Peers might bully depressed and anxious children because they perceive them as vulnerable and easy targets who will not retaliate (Hodges & Perry, 1999). Children who in contrast behave aggressively might experience peer victimization because their peers view aggressive behavior as inappropriate or in violation with common social norms (Hanish & Guerra, 2000a). Notably though, some studies do not find an association between mental health problems and later victimization (Bond, Carlin, Thomas, Rubin, & Patton, 2001; Kim, Leventhal, Koh, Hubbard, & Boyce, 2006). This discrepancy in findings may be related to different follow-ups, age groups examined and measurements used.

As previously noted, although ODD is among the most common childhood externalizing behavior disorders, research on the relation between ODD and victimization is lacking. However, studies on externalizing behavior and victimization have been conducted. Because ODD is considered an externalizing behavior disorder, it is reasonable to assume that these findings may also apply to children with ODD symptoms. The relation between

externalizing problems and victimization seem to be bidirectional, where aggressive behavior make children more likely to become victimized, which in turn make them increasingly aggressive, and thereby even more prone to victimization, creating a vicious circle (see Reijntjes et al., 2011). For example, Hodges et al. (1999) reported that externalizing problems largely acted as an independent predictor of subsequent peer victimization, indicating that children who provoke aggressors are prone to experience victimization by their peers. Hanish and Guerra (2000a) found in their longitudinal study, that aggression predicted victimization two years later and that rejection operated as a mediator between aggression and victimization. The relation between victimization and aggression occurred across different school contexts, ethnicity, age and sex. They suggested that aggressive children have an increased risk of being targets of victimization mainly due to their peers' interpretation and perceptions of the aggressive behavior as undesirable, not due to the aggressive behavior per se.

Investigating the opposite direction, Hodges et al. (1999) found that victimization in 4th and 5th grade predicted externalizing problems a year later. Further, Lamarche (2007) found that peer victimization predicted an increase in boys reactive, but not proactive aggression. This relation was not evident in girls. In boys the relation between victimization and reactive aggression was moderated by their reciprocal friends display of reactive aggression, thus showing that boys response to victimization is affected by their friends behavior. Lamarche et al. (2007) suggest that peer victimization might trigger reactive aggression in boys due to their need to retaliate or defend themselves. Research has further reported that aggressive children are more likely to attribute hostile intentions to their peer's behavior in situations where this is not warranted, compared to non-aggressive children (Dodge & Frame, 1982; Dodge & Newman, 1981; Nasby, Hayden, & DePaulo, 1980). It is

possible that a history of victimization causes children to develop a tendency to attribute hostile intentions to their peers' behaviors, which in turn might trigger aggressive behavior.

Children with externalizing problems are often rated as having poorer social competence compared to children who exhibit lower levels of externalizing behavior (Burt & Roisman, 2010). Social competence can be defined as a person's capability to interact effectively and positively with other people and involves numerous emotional, cognitive and behavioral skills that effects children's adjustment to their social worlds (Vaughn et al., 2009; Waters & Sroufe, 1983). Studies have shown that children's externalizing problems have a negative effect on their development of social skills (e.g. Burt & Roisman, 2010; Chen et al., 2010). For example, Burt and Roisman (2010) found in their longitudinal study, that early externalizing behavior had negative effects on social competence, which in turn predicted internalizing problems. Children with externalizing problems show impairment in numerous aspects of their social problem solving: They are more prone to miss relevant social cues and attribute hostile intentions to their peers in ambiguous situations (Dodge & Frame, 1982). A study by Crick and Ladd (1990) further showed that aggressive children expect positive effects in response to their aggressive solutions. In light of these studies it is not surprising that externalizing behavior in children predicts rejection by their peers (see Deater-Deckard, 2001). It is further reasonable to assume that victimization of aggressive children may develop as a consequence of their lower social competence. A recent study by Camodeca, Caravita, and Coppola (2014) found that victimization was negatively associated with social competence, possibly indicating that children with low social competence are prone to experience victimization.

Different types of peer victimization

It has been questioned whether different forms of victimization may cause different effects on the targets mental health (Lundh et al., 2014). Studies have demonstrated the utility

of differentiating between various forms of victimization, such as direct and indirect victimization, because their relation to mental health may differ (Baldry, 2004; Cullerton-Sen & Crick, 2005; Lundh et al., 2014; Prinstein, Boergers, & Vernberg, 2001; Sullivan, Farrell, & Kliewer, 2006). Direct victimization includes being victim of experiences such as physical aggression or teasing carried out by peers, while more indirect forms of victimization include experiences such as ostracism or peers' spreading of malicious rumors (van der Wal, de Wit, & Hirasing, 2003). Research on peer victimization has usually examined direct forms of victimization exclusively, but a growing body of research examining more indirect forms of victimization is starting to emerge. Some studies have found a greater association between indirect, than direct victimization, and internalizing problems (e.g. Baldry, 2004; Lundh et al., 2014; van der Wal et al., 2003). For example, Baldry (2004) found that the impact of being victimized on anxiety and depression was higher for indirect than direct victimization. In a recent longitudinal study Lundh et al., (2014) found that only indirect victimization, not direct victimization, predicted emotional problems and conduct problems in a sample of adolescents. Such findings underline the importance of addressing both types of victimization when exploring their associations with mental health problems. Available literature thus indicates that indirect peer victimization may cause more harm than more direct forms of victimization. Further, it appears that indirect victimization may be a stronger predictor for both internalizing and externalizing problems (Lundh et al., 2014). However, the effects of different types of victimization on specific adjustment problems are understudied (Hoglund & Leadbeater, 2007). More research is needed to identify the links between different types of peer victimization and externalizing problem behaviors. The current study will therefore examine the relation between symptoms of ODD and both direct and indirect victimization.

In sum, children who are targets of victimization may experience different consequences of victimization on mental health depending on the type of bullying they are

exposed to. A greater knowledge about the causes of this heterogeneity in outcomes is needed. Further, the majority of research on mental health has examined internalizing problems exclusively. Thus, studies that investigate the differential impact of indirect and direct victimization on externalizing problems are largely lacking (Baldry, 2004).

The present study therefor investigates the hypothesis that different types of victimization might be differently related to symptoms of ODD.

Gender differences

Studies have shown that boys more often experience victimization compared to girls (Baldry, 2004; Boulton & Underwood, 1992; Hanish & Guerra, 2000b; Nansel et al., 2001; Whitney & Smith, 1993). Further, boys display more enduring effects of victimization than girls do (Hanish & Guerra, 2002). It has been assumed that boys, more often than girls, experience direct victimization, whereas girls more frequently are victims of indirect victimization (van der Wal et al., 2003). However, research on gender differences in the prevalence of different types of victimization is inconsistent, with some studies supporting the aforementioned assumption (e.g. Crick, Casas, & Ku, 1999; Cullerton-Sen & Crick, 2005; Lundh et al., 2014) while others have found gender differences with regard to direct victimization only (e.g. Baldry, 2004; Prinstein et al., 2001; Roecker Phelps, 2001; Sullivan et al., 2006). Giles and Heyman (2005) report that the way we process social information is influenced by gender schemas that develops early in life. It is possible that teachers, peers and parents report more indirect victimization in girls because they expect girls to be more prone to this type of victimization, thus causing underreporting of indirect victimization in boys.

Some studies indicate that victimization might affect mental health problems differently in boys and girls (Hanish & Guerra, 2002; Paul & Cillessen, 2003; Rusby, Forrester, Biglan, & Metzler, 2005; Snyder et al., 2003; Sullivan et al., 2006). For example, in a longitudinal study, Paul and Cillessen (2003) found that victimization predicted higher

levels of anxiety, depression and negative social self-perceptions in girls than in boys.

Sullivan, Farrell and Kliewer (2006) reported in their cross sectional study that the association between physical victimization and the three outcomes alcohol use, delinquency and aggression, was stronger for boys than for girls. Boys display disruptive behaviors more often than girls, and such behaviors are also more normative and socially reinforced in boys (Hanish & Guerra, 2002), possibly explaining the finding that boys more often react with aggression in response to victimization than girls do. Contrary to these findings, however, Lundh et al. (2014) found similar effects of victimization on mental health for both genders. They reported that indirect victimization predicted emotional symptoms and conduct problems in early adolescence; no gender differences emerged in these relations.

Hankin and Abramson (2002) have reported that girls have a greater cognitive vulnerability than boys, which means that they are more prone to make negative inferences about the cause of an event. Further, Rudolph et al. (2011) have proposed that this negative cognitive style might make girls more likely to take the blame for being victimized compared to boys, which in turn may lead to depressive symptoms, suggesting a stronger link between victimization and internalizing problems in girls compared to boys. Studies have shown that a negative attribution style predicts symptoms of depression, but not externalizing problems (Hankin & Abramson, 2002; Robinson, Garber, & Hilsman, 1995). Boys, possibly being less likely to make internal attribution of blame might be more prone to display direct forms of aggression in response to victimization in order to retaliate. Salmivalli, Karhunen, & Lagerspetz (1996) found that while girls usually responded to victimization with helplessness and nonchalance, boys usually responded with counter aggression or nonchalance, possibly indicating that victimization are more likely to cause externalizing rather than internalizing problems in boys. Meta-analytic research reports that boys display more overt forms of aggression than girls (Archer, 2004; Card, Stucky, Sawalani, & Little, 2008). The literature

further indicates that the likelihood of developing psychopathology is much higher for boys compared to girls during middle childhood (McDermott, 1996). In light of these aforementioned studies it is reasonable to assume that the effect of victimization on mental health will differ depending on gender in middle childhood.

In sum, of those who actually have examined gender differences in the effect of victimization on mental health, some studies report similar findings across gender (e.g. Lundh et al., 2014), whereas others report different patterns for girls and boys (Hanish & Guerra, 2002; Paul & Cillessen, 2003; Rusby et al., 2005; Snyder et al., 2003; Sullivan et al., 2006). The differing findings in gender differences in response to victimization may be due to several methodological disparities, such as differences in measures used, age group and informants. More research is needed to determine whether there are consistent gender differences in the relation between victimization and mental health problems. Further, the majority of studies examining this relation have examined internalizing problems exclusively. It is therefore unknown whether the relation between victimization and subsequent externalizing problems differs across genders. The current study therefore investigates whether the potential influence of victimization on children's symptoms of ODD differs dependent on gender.

Oppositional defiant disorder in children

As already noted, ODD is among the most common childhood externalizing behavioral disorders (Dick, Viken, Kaprio, Pulkkinen, & Rose, 2005), with estimated lifetime prevalence of 10.2% (Nock et al., 2007). According to The Diagnostic and Statistical Manual of Mental Disorders (DSM), ODD can be defined as an enduring pattern of negative, disobedient and hostile tendencies, that are developmentally inappropriate, and starts in childhood or adolescence (American Psychiatric Association, 2013). Children with ODD

often display temper tantrums, annoy others intentionally and frequently argue with adults (Dick et al., 2005).

Most studies of ODD have investigated ODD in combination with other disorders, such as conduct disorder (CD) (Angold, Costello, & Erkanli, 1999; Burke, Loeber, & Birmaher, 2002; Burke et al., 2005), which is characterized by behavior that violates societal norms and/or others rights (American Psychiatric Association, 2013). ODD is regarded a milder disorder than CD and ODD is often described as an early stage to CD (Rowe, Maughan, Pickles, Costello, & Angold, 2002). Studies have also shown that ODD shares risk factors with CD (see Burke et al., 2002). As a result of these findings few empirical studies have examined ODD without combining it with CD (Burke et al., 2005), despite these being separate disorders. Research shows that the developmental trajectories and the genetic correlations to ODD and CD are somewhat different (Dick et al., 2005; Hudziak, Derks, Althoff, Copeland, & Boomsma, 2005). Even though ODD is often viewed as a prodromal stage to CD, only about 42% of children with symptoms of ODD develop CD (Nock et al., 2007). Nock et al. (2007) claim that research regarding ODD is largely lacking, specifically pointing to that ODD is a distinct psychiatric disorder and thus should be given much more focus in future research.

ODD is associated with a range of difficulties. In addition to predict future CD (Burke et al., 2005), ODD has also been shown to forecast depression, anxiety (Burke et al., 2005; Lavigne et al., 2001) ADHD (Lavigne et al., 2001) and antisocial behavior (Langbehn, Cadoret, Yates, Troughton, & Stewart, 1998). As already noted, research further indicates that ODD is associated with impairment in social functioning, both at school and in interaction with parents and siblings (Greene et al., 2002). A negative relation between ODD and achievement in school and a negative association between ODD and family function (Greene et al., 2002) has also been reported. Overall, children with ODD are at heightened risk for

difficulties in several domains of life. Identifying risk factors for ODD as well as examining potential consequences of ODD is therefore important. The present inquiry contributes to this by testing the potential reciprocal relation between ODD symptoms and victimization.

Research on gender differences in the prevalence of ODD is inconsistent (see Loeber, Burke, Lahey, Winters, & Zera, 2000). Whereas most studies report male gender to increase the risk for CD, this pattern does not seem to emerge in studies investigating ODD exclusively (Boden, Fergusson, & Horwood, 2010; Lahey et al., 2000; Rowe et al., 2002). Although some studies indicate that boys are more likely to be diagnosed with ODD than girls (e.g. Maughan, Rowe, Messer, Goodman, & Meltzer, 2004), the majority of studies report no sex differences or only a slightly higher prevalence in boys (see Loeber et al., 2000). In spite of these findings, most studies examining ODD have only included boys (Paap et al., 2013).

The relation between victimization and oppositional defiant disorder

As noted, research suggests that there is a bidirectional relationship between victimization and externalizing problems (Reijntjes et al., 2011). Given that ODD is categorized as a disruptive behavioral disorder it is reasonable to assume that the association between ODD and victimization also will be bidirectional, but specifically testing this assumption is warranted because disruptive behavior is a broad term including more than symptoms of ODD. Also ADHD and CD is considered disruptive behavior problems (American Psychiatric Association, 2013).

As noted, only one longitudinal study has examined whether there is an association between ODD and victimization (Verlinden et al., 2015). A limitation of this study was the use of a checklist measure to assess symptoms of ODD, which has clear disadvantages compared to interviews, when examining data on psychiatric disorders (Egger & Angold, 2004). Some cross sectional studies have also investigated the association between victimization and symptoms of ODD. For example Kumpulainen, Räsänen, and Puura (2001)

found that 7.7 percent of children being victimized had ODD compared to 3.2 percent in the control group. This finding indicates an association between ODD and victimization, although the casual pathways cannot be established due to the cross sectional nature of the study. The association between ODD and victimization has also been reported in adolescents (Kokkinos & Panayiotou, 2004). Further, Fite, Evans, Cooley and Rubens (2014) found that symptoms of ODD were associated with indirect victimization for both genders, but only direct victimization for males. Studies have shown that males are more likely to experience direct victimization than girls (e.g. Baldry, 2004; Lundh et al., 2014; Roecker Phelps, 2001), which may explain why ODD symptoms only were related to direct victimization for males and not for females. But again, due to the cross sectional nature of these studies the casual pathways has not been established. Prospective designs are needed to reveal the direction of influence.

As noted, children with ODD are prone to develop impairment in social function (Greene et al., 2002) and often fail to interact positively and constructively with their peers (Frankel & Feinberg, 2002). Impairment in social function might make children with ODD more prone to experience victimization by their peers than other children. Less frequent engagement in positive social interactions with peers might further impair their subsequent social development because of fewer opportunities to practice and develop positive social skills. This might in turn make them even more prone to experience victimization, possibly creating a vicious circle. Matthys, Cuperus, & Engeland (1999) found that boys with ODD/CD encoded fewer social cues than the normal control group, which in turn is assumed to affect the behavior displayed in the situation. Further, Cadesky, Mota, and Schachar (2000) found that children with ODD/CD had a higher tendency to misinterpret others emotions as anger compared to children with ADHD and a normal control group. Childrens ability to interpret the emotions of other people are crucial for their opportunity to engage in effective and appropriate interactions with peers (Cadesky et al., 2000), thus impairment in this

function might cause social difficulties. For example, Goldman, Corsini, and DeUrioste (1980) found that children who have problems decoding emotion from facial expression are less accepted and more disliked by their peers. Studies that examine whether children with conduct problems have lower social competence and larger defects in social problem solving compared to children without conduct disorder have failed to differentiate between ODD and CD. It is therefore unknown whether these findings also pertain to children having ODD without comorbid CD. However, studies showing that children with ODD have impairment in their social function (Frankel & Feinberg, 2002; Greene et al., 2002) support the assumption that children with ODD might have a lower social competence than children without ODD, and might in turn increase these children's risk of experiencing victimization by their peers.

Summary and objectives of the present study

Although a large body of research has examined the association between victimization and mental health problems the last couple of decades, the majority of this research has examined internalizing problems. There are considerable gaps in our knowledge regarding the relationship between victimization and externalizing problems. In particular, there is a lack of studies that examine the potential bidirectional relationship in this line of research. The vast majority of research has either examined victimization as a predictor of later externalizing problems or externalizing problems as a predictor of later victimization, measuring the hypothesized outcome at one time point only. The obtained results can therefore be due to unmeasured externalizing problems or victimization at the first testing, when predictors were examined. Notably though, a small handful of studies have examined the bidirectional relation, but as with the majority of research within this field, these studies have assessed externalizing problems using questionnaires, which gives limited specificity of information regarding context, onset, duration and severity of the behavior problems (Egger & Angold, 2004).

Research on the relationship between victimization and diagnostically defined behavior problems, such as ODD, are largely lacking. To the best of my knowledge no longitudinal study has investigated the reciprocal relationship between victimization and ODD. The prevalence of children having ODD is reported to be relatively high, compared to other childhood disorders (Egger & Angold, 2006; Ford et al., 2003), and children with ODD seem to be especially vulnerable to problems in social interactions (Greene et al., 2002) There is also a high prevalence of children experiencing victimization (Nansel et al., 2004) and meta-analytic research have shown that victimization can have adverse effects on the children`s mental health (e.g. Reijntjes et al., 2011; Reijntjes et al., 2010). Taken together, this underlines the importance of addressing the relation between victimization and ODD. More specifically, clarifying the relationship between victimization and ODD is pertinent in order to prevent a possible cascading relation between victimization and ODD.

The present study therefore aims to address the aforementioned lack of research by testing the bidirectional relationship between victimization and symptoms of ODD in a large and representative community sample of 6 years old children, followed up at age 8. Based on research on victimization and questionnaire measured externalizing problems presented above, I hypothesize that (1) Victimization will increase from age 6 to 8 when children have symptoms of ODD; (2) symptoms of ODD will increase from children`s ages 6 to 8 when children are being victimized. Effects of different types of victimization and gender differences were also explored, but specific hypothesis related to gender and types of victimization were not stated given the lack of a theoretical and empirical base to generate such hypotheses. Examination of gender differences is considered to be explorative in nature.

Method

Participants and procedure

An invitation to participate in a longitudinal study on children's psychosocial development and mental health was sent by mail to all parents with children born in 2003 or 2004 in Trondheim, Norway (Wichstrøm et al., 2012). The invitation letter included the Strengths and Difficulties Questionnaire (SDQ) version 4-16 (Goodman, 1997). Parents were asked to bring the completed SDQ form to the ordinary community health check for 4-year olds. During this health check, the staff working at the health clinic informed the parents about the study and obtained their written consent to participate.

The total difficulties score of the SDQ-questionnaire, used for screening, was divided in to four strata: 0 to 4, 5 to 8, 9 to 11, and 12 to 40. A defined portion of children and parents in each stratum (0.37, 0.48, 0.70 and 0.89, respectively) were asked to participate. The probability of being asked increased with higher SDQ-scores in the four strata. This oversampling for mental health problems was done to increase the variability and thus the statistical power and is accounted for in the statistical analysis (see Results).

82.1% of the eligible families gave their consent at the first testing, when the children were 4 years old. The children were later retested at ages 6 and 8 years. Figure 1 shows the recruitment procedure and the flow of participation. The measure of victimization was first included at the first retesting (T1) the present study therefore only uses data from the first and second retesting (T2), when the children were 6 and 8 years old, respectively. When the children were 6 years old, 81.1% of the parent informants were mothers, whereas 18.9% were fathers. The vast majority of parents were of Norwegian origin (mothers 93.0%, fathers 93.0%). Regarding the informant parent's socioeconomic status, 12.5% were leaders, 36.7% had higher level professionals, 36.2% had lower level professionals, 14.1% were formally

skilled workers, and finally, 0.6% were unskilled workers. The regional Committee of Medical Health Research Ethics approved the research procedures used in this study.

Measures

Victimization. The Norwegian version of the revised Olweus Victimization Scale (Kyriakides, Kaloyirou, & Lindsay, 2006) was used to measure victimization. The children's teachers gave responses to the questionnaire, which is made up of six items measuring both direct (3 items, e.g. "He/she was physical bullied by others", $\alpha = .81$) and indirect (3 items, e.g. "He/she was ignored by other children", $\alpha = .51$) victimization. Response options were measured on a five point Likert scale, ranging from Never (1) to Every day (5). All six items were aggregated into a sumscore ($\alpha = .75$). Further, separate sumscores for direct and indirect victimization was created, in order to examine the relation between subtypes of victimization and children's ODD symptoms.

ODD symptoms. The Preschool Age Psychiatric Assessment (PAPA)(Egger et al., 2006) was used to measure symptoms of ODD at age 6. The PAPA is a semi-structured diagnostic interview that covers a wide range of psychiatric disorders. Trained research assistants conducted the interview on the children's parents. The PAPA is directed by a structured protocol including both required and optional follow-up questions. Questions are asked until the interviewer has enough information to decide whether the symptom is present at a predetermined level of severity. Due to concern with the reliability of memory for longer periods, PAPA primarily focuses on symptoms that have been present for the three months immediately preceding the interview (Egger & Angold, 2004). The PAPA is widely used and has established good test-retest reliability (Egger et al., 2006). A measure of number of ODD symptoms was created as the sum of all symptoms of ODD present. At age 8 we used the child and adolescents version of the PAPA, the CAPA (Angold & Costello, 2000), this time interviewing the children as well. The PAPA and CAPA interviews were audiotaped for

coding. To establish interrater reliabilities 9% and 15% of the PAPA and CAPA interviews, respectively, were recoded by independent coders blind to all information about the family. Interrater reliabilities for ODD using intra-class correlations were .97 for the PAPA and .90 for the CAPA.

Results

Bivariate correlation analyses (Pearsons r) were performed to examine the relation between the different variables at each measurement point, as well as the association between outcomes at T1 and T2. To examine the reciprocal relation between ODD symptoms and victimization, a cross-lagged autoregressive model was applied. In such a model, the autoregressive paths reflect the stability of the outcome variables. In addition, the cross-lagged paths between different variables are estimated allowing for within time associations. As can be seen in Figure 2, the model tested the path from children's symptoms of ODD at age 6 to age 8 and from victimization at age 6 to age 8 (autoregressive paths). The cross-lagged paths constitute the path from children's symptoms of ODD at age 6 to victimization at age 8, and from victimization at age 6 to symptoms of ODD at age 8. Analyses included 790 children (393 boys and 397 girls) with available data on victimization and ODD symptoms.

To examine gender differences a second round of analyses were run, testing one subgroup model for each of the genders respectively (Figure 3 and Figure 4). In these subgroup analyses, the study also estimated the paths from direct and indirect victimization at age 6 to children's symptoms of ODD at age 8 and from children's symptoms of ODD at age 6 to direct and indirect victimization at age 8 (Figure 3 and Figure 4). Wald tests of parameter constraints were used to examine whether there were gender differences in these paths, comparing a model where the path in question was set to be identical between genders and a

model where it was freely estimated. This procedure was also used to test whether the level of victimization and ODD symptoms (i.e. means) differed between boys and girls. The study adjusted for using a screen-stratified sample by weighting all parameters with the inverse of the drawing probability for each subject, thus high screen scores were “weighted down”, and low screen scores were “weighted up”. A Robust maximum likelihood estimator with robust standard errors was used to adjust for non-normality on variable frequencies. Missing values were handled with the full information likelihood estimator. This procedure gives general population variables that are unbiased. A corrected chi-square difference test was used for nested model comparisons. All analysis were performed using Mplus version 7.2 (Muthén & Muhthén, 2012).

Preliminary analyses

As shown in Table 1, boys experienced more direct victimization than girls at both measurement points, whereas girls experienced more indirect victimization than boys at age 8 only. Boys also experienced greater overall levels of ODD symptoms than girls at both ages. As can be seen in Table 2, direct victimization at T1 did not correlate with ODD symptoms at T2, whereas indirect victimization at T1 showed a weak correlation to symptoms of ODD at T2. A moderate to high correlation was found between direct and indirect victimization at T1.

Bidirectional relations between victimization and symptoms of ODD

The results of the auto-regressive cross-lagged analysis are presented in Figure 2 (overall model), 3 (boys only) and 4 (girls only). As a first step, the current study examined an overall model where the sumscore of all victimization items was used (see Figure 2). As a second step, direct and indirect victimization was tested separately in gender specific analyses, to see whether different types of victimization were differently related to children’s symptoms of ODD and whether these relations were gender dependent.

Table 1. Means of study variables at age 6 and 8

	Total	Boys	Girls	Gender differences	
Outcome variables	Mean (95% CI)	Mean (95% CI)	Mean (95% CI)	χ^2	<i>p</i>
ODD symptoms					
Age 6	0.96 (0.87, 1.05)	1.08 (0.95, 1.21)	0.84 (0.72, 0.96)	6.89	≤.01
Age 8	0.53 (0.45, 0.60)	0.65 (0.53, 0.76)	0.41 (0.31, 0.50)	9.54	≤.001
Indirect victimization					
Age 6	3.03 (2.94, 3.13)	2.97 (2.83, 3.09)	3.10 (2.96, 3.24)	1.85	.17
Age 8	3.00 (2.88, 3.10)	2.86 (2.71, 3.00)	3.10 (2.95, 3.26)	5.05	.02
Direct victimization					
Age 6	2.88 (2.79, 2.97)	3.03 (2.90, 3.17)	2.73 (2.17, 2.83)	11.15	≤.001
Age 8	2.78 (2.68, 2.87)	2.91 (2.76, 3.04)	2.65 (2.53, 2.76)	7.45	≤.01

Table 2. *Bivariate correlations between victimization and symptoms of ODD at Time 1 (T1) and Time 2 (T2).*

T1	Victimization			T2	Victimization		
	ODD	Direct	Indirect		ODD	Direct	Indirect
1. ODD	1.00	.09*	.12**	.35***	.10	.06	
2. Direct victimization		1.00	.42***	.13**	.21***	.13**	
3. Indirect victimization			1.00	.16***	.27***	.35***	
T2							
4. ODD				1.00	.14**	.09	
5. Direct victimization					1.00	.47***	
6. Indirect victimization						1.00	

Note: Correlations estimates = Pearsons *r*.

* = $p < .05$; ** = $p < .01$; *** = $p < .001$.

As displayed in Figure 2, the estimated autoregressive paths indicate a low to moderate stability of victimization and ODD symptoms from age 6 to age 8. Further, the cross-lagged paths show that symptoms of ODD did not predict subsequent victimization in the overall model, when the sumscore of all victimization items was used as the outcome. Finally, as shown in figure 3 and 4, symptoms of ODD at age 6 did also not predict direct nor indirect victimization at age 8 when these were treated separately. A Wald test was used to examine differences between girls and boys, but no such differences appeared, neither for the

pathway from ODD symptoms to direct victimization (Wald = .04, $df = 1$, $p = .83$) nor for the pathway from ODD symptoms to indirect victimization two years later (Wald = .07, $df = 1$, $p = .79$).

With regard to the opposite direction of the relation, on the other hand, the results showed that in the overall model, victimization predicted symptoms of ODD two years later when baseline levels of symptoms were accounted for. When differentiating between subtypes of victimization and testing gender effects, I found that indirect victimization at age 6 predicted increased levels of victimization at age 8 in boys only, although the association was bordering on significance for girls. Direct victimization at age 6 did not affect the level of subsequent ODD symptoms two years later. A Wald test of parameter constraint was used to examine gender differences in this direction of the relation as well, but no such differences appeared, neither for the pathway from direct victimization to symptoms of ODD (Waldtest = 1.04, $df = 1$, $p = 0.31$) nor for the pathway from indirect victimization to ODD symptoms (Waldtest = .79, $df = 1$, $p = .37$).

Overall, the present study did not find evidence for a bidirectional relation between victimization and symptoms of ODD in 6 year olds followed up at the age of 8.

Discussion

The aim of the present study was to examine the potential bidirectional relationship between victimization and symptoms of ODD in children from the age of 6 to 8. I hypothesized that (1) victimization will increase from the age of 6 to 8 when children have symptoms of ODD, and (2) symptoms of ODD will increase from the age of 6 to 8 when children are being victimized. Effects of different types of victimization and gender differences were also explored. In contrast to what was expected, symptoms of ODD at age 6 did not predict victimization two years later when children's symptoms of ODD at age 6 were

adjusted for. Consistent with our second hypothesis though, victimization at age 6 predicted symptoms of ODD at age 8 when the level of victimization at age 6 was taken into account. Examining gender effects and different types of victimization revealed that indirect, whereas not direct victimization at age 6, predicted an increase in symptoms of ODD two years later. Notably, this was evident in boys only although this effect was bordering on significance for girls.

Overall, the results did not show a significant prospective bidirectional relationship between victimization and symptoms of ODD. According to the current findings victimization predicted later ODD symptoms, but ODD symptoms did not predict later victimization in children from the age of 6 to 8.

Gender differences in prevalence of direct and indirect victimization

In the current study, boys experienced more direct victimization than girls, whereas girls experienced more indirect victimization than boys at age 8, but not at age 6. These gender differences in the prevalence of indirect and direct victimization concurs with several other studies (e.g. Crick et al., 1999; Cullerton-Sen & Crick, 2005; Lundh et al., 2014). Gender differences in prevalence of direct and indirect victimization may be due to socialization differences. Children usually play with same-sex mates (Fabes, Martin, & Hanish, 2003; Martin & Fabes, 2001), which might make them more prone to experience victimization by children with the same gender. Boys more often gather in large groups and engage in rougher interaction with each other than girls do (Fabes et al., 2003). Further, boys display disruptive behaviors more often than girls, and such behaviors are also more normative and socially reinforced for boys (Hanish & Guerra, 2002). This might foster more opportunities for boys to directly victimize other boys, without risking their own social status, thus, making boys more prone to direct victimization than girls. Girls on the other hand, usually play in smaller groups, and their friendships are more intimate than those of boys in

the sense that they disclose more about themselves to their friends (Markovits, Benenson, & Dolenszky, 2001). The more intimate interactions among girls might make it easier for them, compared to boys, to exploit their relationships through indirect victimization and thereby cause harm on their victims (Lagerspetz, Björkqvist, & Peltonen, 1988), for example by means of spreading vicious rumors about each other. Further, from a young age girls more often play near adults than boys (Fabes et al., 2003), possibly creating a greater need to use indirect forms of bullying so that they don't get caught.

Symptoms of ODD at age 6 did not increase victimization at age 8

To the best of my knowledge, my inquiry is the first longitudinal study in school-aged children examining the relation between symptoms of ODD and subsequent victimization. The current findings accord with one earlier study in preschoolers, reporting that ODD symptoms at the age of 1.5, 3 and 5 years did not predict victimization when the children entered school (Verlinden et al., 2015). The present study adds to the existing literature by examining the prospective relation between ODD symptoms and victimization in school-aged children, but also extends earlier cross sectional findings by using a psychiatric interview rather than a checklist measure of ODD. As previously noted, Egger and Angold (2004) have reported that checklist measures obtain too limited specificity of information regarding context, onset, duration and severity of behaviors to generate specific psychiatric diagnosis from them. They have also reported that checklist measures often do not include all the relevant symptoms of psychiatric disorders.

Although one might assume that the behavior tendencies displayed by children with ODD will provoke physical attacks or exclusion from their peers, the present study found that symptoms of ODD neither predicted direct (e.g. verbal or physical abuse) nor indirect (e.g. ostracism or spreading of malicious rumors) victimization. In accordance with our results, Scholtens, Diamantopoulou, Tillman, and Rydell (2012) examined the effects of symptoms of

ODD and ADHD on social acceptance in children between 7 and 13 years old and did not find symptoms of ODD to be particularly important for social acceptance. Social acceptance were mainly associated with symptoms of inattention, and less with hyperactivity/impulsivity and ODD. Scholtens et al. (2012) hypothesized that symptoms of ODD may primarily be directed towards adults and that these symptoms therefore are less annoying to the children's peer groups, possibly explaining why the current study did not find ODD symptoms to increase the risk for victimization.

As previously mentioned research shows that children with ODD are prone to develop impairment in social function (Frankel & Feinberg, 2002; Greene et al., 2002). Behavior problems and social skills may seem as the opposite ends of the same construct, but studies have shown that these constructs are distinct (e.g. Bates, Bayles, Bennett, Ridge, & Brown, 1991; Dubow, Tisak, Causey, Hryshko, & Reid, 1991). In accordance with this, several studies have found that children with behavior problems are capable of displaying prosocial behavior (see Berry & O'Connor, 2010). Prosocial behavior displayed by children has further been shown to predict positive relations to peers, controlling for behavior problems (Bukowski & Newcomb, 1984; Vitaro, Gagnon, & Tremblay, 1990), thus the relation between behavior problems and social behavior is complex. To further complicate this picture, several studies have shown that aggressive children are often viewed as popular by peers (LaFontana & Cillessen, 2002; Parkhurst & Hopmeyer, 1998; Rodkin, Farmer, Pearl, & Van Acker, 2000; Vaillancourt & Hymel, 2006). Vaillancourt and Hymel (2006) examined aggression and social status and found that although the majority of children in the study disliked their aggressive peers, they were looked at as popular and in possession of power. Similarly Rodkin et al. (2000) found that highly aggressive children could be among the most socially connected and popular children in elementary school. These findings offer a potential explanation for why the current study did not find symptoms of ODD to predict

gains in victimization. ODD symptoms include criterias such as “often blame others for his or her mistakes or misbehavior”, “is often angry an resentful” and “is often spiteful or vindictive”. It is possible that these symptoms make children with ODD less liked by peers, while at the same time make peers percieve them as powerful and popular, thereby protecting them against victimization. Consistent with this assumption, Cillessen and Mayeux (2004) reported that aggressive behavior often seems to give children social benefits rather than making them prone to victimization by their peers.

It should also be noted that the present research investigated ODD symptoms in a community sample of children. It is possible that the levels of ODD symptoms were too modest to affect the children’s social interactions, possibly explaining why ODD symptoms did not forecast victimization. Future studies should examine whether this applies to children with diagnostically defined ODD as well.

Another possible explanation for the lack of a significant path from ODD symptoms to victimization is that the behavior patterns displayed by children with ODD might make potential bullies afraid of retaliation, thereby reducing these children’s risk of being victims of bullying. Since most ODD symptoms are reactive in nature (Vitaro, Gendreau, Tremblay, & Oligny, 1998), it might be assumed that children with ODD will retaliate in the experience of victimization, possibly causing bullies to leave them alone. Consistent with this assumption, studies have shown that bullies perceive certain responses from their victims as more expected and valued than other responses. For example, Perry and Perry (1974) found that bullies perceived suffering as a highly valued response from their victims, and that bullies often would continue to victimize a child until signs of suffering were obtained. Further studies have shown that bullies choose victims whom they believe they can obtain control over, putting children who display signs of submissiveness at particular risk for victimization (Boldizar, Perry, & Perry, 1989; Schwartz, Dodge, & Coie, 1993). Since symptoms of ODD

mainly are externalizing in nature bullies might be less likely to obtain these highly valued responses from children with ODD. Perry et al. (1990) found that children don't expect victimized peers to retaliate after acts of harassment and attacks, which might indicate that children who are perceived as likely to retaliate are less likely to be victimized. Thus, the reactive symptoms displayed by children with ODD might make them less likely to experience victimization from their peers, possibly due to the bullies' fear of triggering counterattacks from these children. It should be mentioned that some studies do find externalizing behavior to predict later victimization though (Hanish et al., 2004; Hanish & Guerra, 2000a; Hodges et al., 1999; Kochenderfer-Ladd, 2003). While Verlinden et al. (2015) did not find ODD to predict later victimization in preschoolers, studies examining externalizing behavior, which is a much broader term than ODD, have found a relation to later victimization. Hanish et al. (2004) found that externalizing problems in preschoolers predicted victimization 6 months later, which also contradicts the current finding in school-aged children. Obviously though, the discrepancy in findings may be due to the difference in the duration of interval between the first testing and the follow-up. Hanish et al. (2004) examined whether externalizing problems predicted victimization 6 months later, whereas the current study had a follow-up interval of 2 years. Thus, the difference in findings might reflect a stronger effect of externalizing problems on later victimization in short term. It is also possible that the relation between externalizing behavior and victimization differs depending on age. A study by Kochenderfer-Ladd (2003) supports this assumption. The authors showed that aggressive behavior in kindergarten predicted a prospective increase in victimization in 1th grade and also predicted the chronicity of victimization. However, after 1th grade aggressive behavior did not predict gains in victimization, which is consistent with the current study.

Although the present study revealed gender differences with regards to the level and type of victimization, the relation between victimization and ODD symptoms did not differ between the genders. To my knowledge no previous study has examined possible gender differences in the relation between symptoms of ODD and subsequent direct and indirect victimization. Some studies have, however, examined gender differences in the relation between externalizing behavior and subsequent victimization (e.g. Dhimi et al., 2005; Rudolph et al., 2011; Snyder et al., 2003), but the findings are inconsistent, and few of these studies have differentiated between different types of victimization. The lack of consistency in the results might be due to several important methodological factors, such as different age groups, measurements, informants, etc. It should also be mentioned that it is possible that the findings regarding gender differences when examining externalizing behavior and victimization do not apply to children with ODD. Future studies are nevertheless needed to confirm the present findings.

Victimization at age 6 increased symptoms of ODD at age 8

In the current study, victimization at age 6 predicted symptoms of ODD at age 8. Children who experience prolonged peer problems might be less likely to develop appropriate social skills, due to fewer opportunities to engage in age-appropriate social interaction. This might make children who experience victimization more prone to develop disruptive behavior, such as symptoms of ODD. Matthys, Cuperus, & Engeland (1999) found that children with ODD/CD encoded fewer social cues than a normal control group when looking at videotaped stimuli of problematic social situations. This deficient in social problem solving might in turn make children with ODD more prone to drawing wrong conclusions regarding their peers intentions, possibly resulting in disruptive behaviors. Consistent with this assumption, research suggests that victimization can cause children to develop a tendency to attribute hostile intentions to their peer's behavior in social situations (Hoglund & Leadbeater,

2007; Schwartz, Dodge, et al., 1998; Yeung & Leadbeater, 2007). Such an attribution style might help explain the increase in children's symptoms of ODD in response to victimization found in the present study. Thus, it might be that symptoms of ODD are invoked in children in response to negative beliefs about their peer's intentions in social situations. As already noted, most symptoms of ODD are reactive in nature (Vitaro et al., 1998), including criterias such as "often blame others for his or her mistakes or misbehavior", "is often angry and resentful" and "is often spiteful or vindictive". It is reasonable to assume that some children might respond with such symptoms if they believe that others have intentionally done harm to them. A history of victimization might have caused these children to develop a fundamental belief about their peers as hostile and unfair, which further might have resulted in them using less cues to draw conclusions about their peers intentions in social situations. The assumption that peers generally are hostile could further explain why children often react with disruptive behavior in social situation, since the perception of hostility are likely to affect these childrens response. Examination of how potential processes through which symptoms of ODD emerge in response to victimization was beyond the scope of the present study. It is therefore unknown whether the present participants developed symptoms of ODD in response to victimization through attribution bias. This possibility should be examined in future studies, since such knowledge could improve current intervention programs for children with ODD.

Increase in ODD symptoms due to victimization may further be explained by greater exposure to delinquent peers. It has been found that victimized children are more likely to associate with deviant peers than non-victimized children (Rusby et al., 2005) and further that associations to deviant peers predict an increase in problem behavior (Ary, Duncan, Duncan, & Hops, 1999; Keena, Loeber, Zhang, & Stouthamer-Loeber, 1995; Patterson, Dishion, & Yoerger, 2000). For example, Keena et al. (1995) found that children's exposure to deviant peers predicted their tendency to display disruptive and delinquent behavior. According to

Bandura (1986) people learn most of their behavior tendencies from observing others. Thus, being friends with deviant peers might lead to an increase in the display of disruptive behaviors, such as the behavior characteristic of children with ODD. In a study comparing contextual factors between children with ODD with or without CD, and healthy controls, Kolko, Dorn, Bukstein, and Burke (2008) found that children with ODD were significantly more exposed to delinquent peers than healthy controls. Associations with deviant peers were further assumed to be one of the most robust contextual factors affecting the development of ODD. Thus, the increased likelihood of exposure to deviant peers after prolonged victimization offers a potential explanation for the current finding that victimization increased symptoms of ODD. It should be noted however, that it is not known whether exposure to delinquent peers cause symptoms of ODD in children or if symptoms of ODD lead children to seek delinquent peers.

As noted, research that examines the relation between victimization and subsequent increases in symptoms of ODD are lacking. Some studies have, however, examined the relation between peer victimization and subsequent externalizing behavior. The current finding harmonizes with numerous of studies showing that victimization predicts later externalizing problems (Hanish & Guerra, 2002; Hodges et al., 1999; Khatri, Kupersmidt, & Patterson, 2000; Kim et al., 2006; Lamarche et al., 2007; Rusby et al., 2005; Schwartz, McFadyen-Ketchum, Dodge, Pettit, & Bates, 1998). For example, in a longitudinal study on school bullying the authors concluded that externalizing problems were a consequence, and not an antecedent of victimization, which accords with our results showing victimization to predict later ODD symptoms (Kim et al., 2006).

Indirect victimization predict subsequent symptoms of ODD in boys

Direct victimization did not predict later ODD symptoms in the current study. Indirect victimization on the other hand, forecasted symptoms of ODD in boys two years later,

whereas the result was bordering on significance for girls. The finding that indirect victimization predicts ODD symptoms whereas more direct forms of victimization do not, harmonizes with several studies showing a greater effect of indirect victimization, than direct, on children's mental health (e.g. Baldry, 2004; Lundh et al., 2014; van der Wal et al., 2003). For example, van der Wal et al. (2003) found that the impact of being victimized on depression and suicidal ideation was higher for indirect than direct victimization. Similarly, Lundh et al. (2014) found that indirect victimization, whereas not direct victimization, predicted an increase in emotional problems, as well as conduct problems a year later in young adolescents. These results are in support of the current finding that different types of victimization might have a differentially impact on the development of children's mental health problems.

Indirect victimization usually includes manipulation of the victim's most intimate social network (Lagerspetz et al., 1988) through ignoring and attempts to make others dislike the victim (Lundh et al., 2014). Indirect victimization, including the victim's experience of the bullies' slander and spreading of untrue rumors, might make it harder for the victim to be able to trust his or hers friends. These experiences might also explain the development of the aforementioned hostile attribution style that children often develop in response to victimization. A recent study by Stenseng, Belsky, Skalicka, and Wichstrøm (2015) found that social exclusion at age 4 predicted impaired development of self-regulation in children two years later. Because social exclusion resembles indirect victimization, it is possible that indirect victimization cause impairment in children's ability to regulate their behavior, which further results in disruptive behavior, such as the behavior tendencies displayed by children with ODD.

Given that indirect victimization is less visible and therefore more difficult to detect than direct victimization it is also possible that victims of indirect victimization experience

less social support and protection from their teachers and friends than victims of more direct forms of victimization, which might increase the risk for mental health problems. According to Rivers and Smith (1994) both girls and boys are much more likely to tell an adult about experiences of direct victimization, than they are to report more indirect forms of victimization. This might be due to the fact that indirect victimization is less visible than direct forms of victimization and thus often more difficult to prove (van der Wal et al., 2003). Further, Boulton (1997) reported that several teachers do not view social exclusion as a form of victimization. Since indirect victimization is often hard to notice, this type of victimization may continue for a longer time than more direct forms of victimization due to lack of people intervening. The possibility of a greater lack of support, protection, and intervening for indirect than more direct forms of victimization, offers potential explanations to why indirect victimization was found to affect children's ODD symptoms to a greater extent than direct victimization.

As previously noted, the current study found indirect victimization to forecast symptoms of ODD in boys only. Consistent with this it has been reported that boys display more enduring effects of victimization than girls do (Hanish & Guerra, 2002). It has further been found that the likelihood of developing psychopathology is much higher for boys compared to girls during middle childhood (Hartung & Widiger, 1998; McDermott, 1996). These findings offer a possible explanation to why the current study found indirect victimization to predict symptoms of ODD for boys, but not for girls. Notably though, there was no gender difference in the path from indirect victimization to ODD symptoms. Thus, although the current study found a significant relation between indirect victimization and later symptoms of ODD in boys and not in girls, the difference in estimates between genders were not significant. In light of the current findings I can therefore conclude that there is a significant relation between indirect victimization and subsequent symptoms of ODD in boys

but not in girls, whereas the difference between genders is not significant. Hence, indirect victimization seems to be equally detrimental, at least in this age group, to the development and course of ODD symptoms in girls and boys.

Clinical implications

The present findings may have important clinical implications. First and foremost, showing that children who are victimized by their peers are at increased risk of developing symptoms of ODD reveals a serious consequence of victimization not earlier identified. Although it is always pertinent to intervene to stop or prevent victimization, this finding identifies victimization as a specific risk factor for the development of ODD symptoms. Acknowledging that there is a magnitude of factors affecting the development and continuance of ODD (see Burke et al., 2002) the current result might indicate that reducing victimization can potentially decrease the risk for developing symptoms of ODD, or potentially reduce symptoms in those who have ODD. Because ODD has been found to increase the risk of developing several secondary disorders (Burke et al., 2005; Lavigne et al., 2001; Nock et al., 2007), early identification of children at risk and early intervention might hinder that children with symptoms of ODD develops comorbid disorders. Notably though, intervention studies are needed to test whether addressing victimization actually affects the development or change in ODD symptoms over time.

Secondly, with regard to the opposite direction, the hypothesis that symptoms of ODD would predict subsequent victimization, over and above initial victimization, was not confirmed. Thus, although children with ODD might experience more victimization than children without this disorder, the present findings does not indicate that addressing children's symptoms of ODD will affect their exposure to victimization.

Further, examination of gender effects revealed that indirect victimization was more prevalent in girls at age 8, but no gender differences emerged at age 6. This illuminates that

also boys experience this type of victimization, which one often expect mostly in girls. Further, the relation between indirect victimization and subsequent victimization was significant for boys only, possibly indicating a greater effect of indirect victimization on future symptoms of ODD for boys compared to girls. Although the gender difference was non-significant, our findings indicate that health professionals and teachers should be aware of the presence of indirect victimization among boys. In the current study the relation between indirect victimization and symptoms of ODD was bordering on significance for girls, possibly indicating that also girls experience some symptoms of ODD in response to indirect victimization. In clinical settings, it is always important to examine whether children with mental health problems are experiencing victimization, but in light of the present finding, health professionals should be particular alert to the effect of indirect victimization on children's symptoms of ODD.

In sum, the present study extends the existing literature by examining the direction of the relation between children's ODD symptoms and victimization. The results shed light on the importance of addressing victimization from an early age to prevent development of ODD symptoms in children and underline the importance of considering children's history of victimization in the presence of ODD symptoms. Finally, the current findings illuminate the importance of addressing the more subtle forms of victimization in order to reduce children's symptoms of ODD and to be particularly aware of the effect of indirect victimization in boys.

Strengths and limitations

The strengths of this study include the use of a large, representative sample and a longitudinal design, which enables examination of the direction of influence between victimization and symptoms of ODD. Secondly, a community sample was used, which enabled the present study to examine subclinical levels of children's ODD symptoms thus enhancing the generalizability of the findings. Thirdly, symptoms of ODD were measured by

means of a diagnostic interview, which provide more specificity regarding the behavioral symptoms compared to checklists (Egger & Angold, 2004). Fifth, teacher reported victimization might be considered as a strength with the current study. Given that ODD symptoms are parent reported, the risk of response bias declines using teacher reported victimization. Further, teachers are reliable informants for several behaviors in childhood (Ladd & Profilet, 1996).

Along with several strengths, I would like to acknowledge some limitations. First, due to the current use of symptom counts rather than psychiatric diagnoses the present results may not generalize to diagnosable ODD. Future studies should examine whether the current findings applies to diagnostically defined ODD, as well, in which impairment and duration criteria are used. Secondly, although teachers are reliable informants for several behaviors in childhood, applying cross-informant data would have been an advantage given that different groups of informants (self, peers, teachers, parents) has common, but also unique perspectives on victimization (Graham, Bellmore, & Juvonen, 2003; Ladd & Kochenderfer-Ladd, 2002). Future research should therefore incorporate multiple informants when measuring victimization. Thirdly, it should be mentioned that longitudinal studies do not allow for strong conclusions regarding cause and effect. Such studies can clarify whether ODD symptoms usually precede peer victimization or arise subsequently, but there is always a possibility that there are other “third” variables that lead to both peer victimization and symptoms of ODD. Experimental studies are needed to detect a true causal pathway, which due to ethical reasons obviously cannot be performed.

Summary and conclusion

The present study examined the bidirectional relations between victimization and children’s symptoms of ODD from age 6 to 8 in a large and representative sample of Norwegian children. Contrary to what was expected, symptoms of ODD at age 6 did not

predict higher levels of overall victimization, neither direct nor indirect types at age 8. Due to the lack of studies examining the prospective relation between symptoms of ODD and victimization the current results need to be replicated. Additional research should be conducted on the potential bidirectional relation between victimization and symptoms of ODD, including different age groups and clinical population.

The lack of significant relations between children's symptoms of ODD and subsequent direct and indirect victimization was independent of gender. In regard to the opposite direction, I found a significant relation between overall victimization and subsequent symptoms of ODD. When I differentiated between the two forms of victimization, I found that indirect, but not direct victimization at age 6 predicted children's symptoms of ODD two years later. This finding was evident in boys only, whereas bordering on significance for girls. Notably though, the difference between boys and girls in the relation between indirect victimization and future symptoms of ODD was not significant. Examination of gender differences as potential moderators should be addressed in future studies. The present findings suggest that victimization should be addressed at an early stage to hinder a possible development or increase in ODD symptoms. When children display symptoms of ODD health professionals should examine whether they experience victimization by their peers and if so address this further in order to prevent an increase in ODD symptoms. The finding that indirect victimization predicted symptoms of ODD in boys illuminates the importance of being alert to this type of victimization among boys in particular.

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Figure 1. Sample recruitment and follow-up

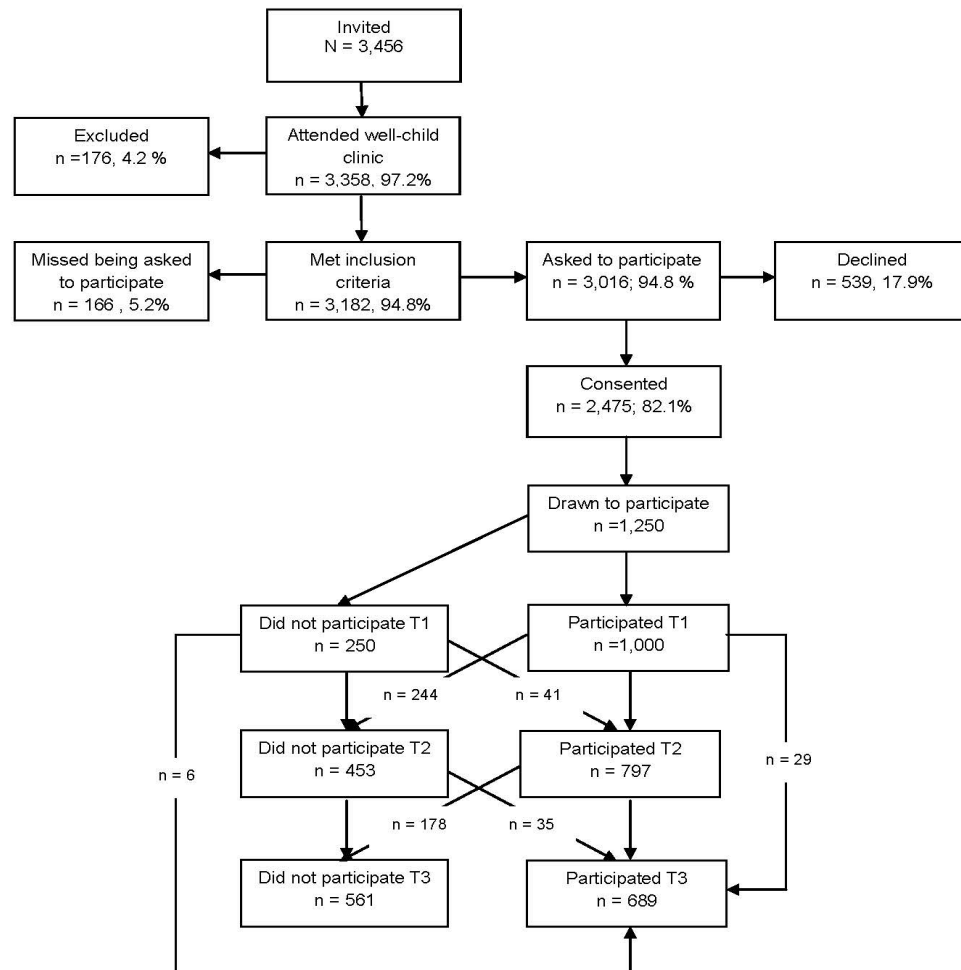
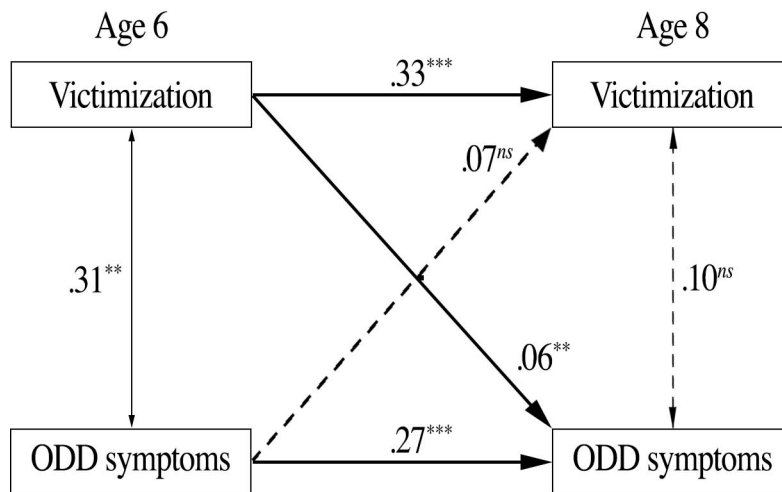
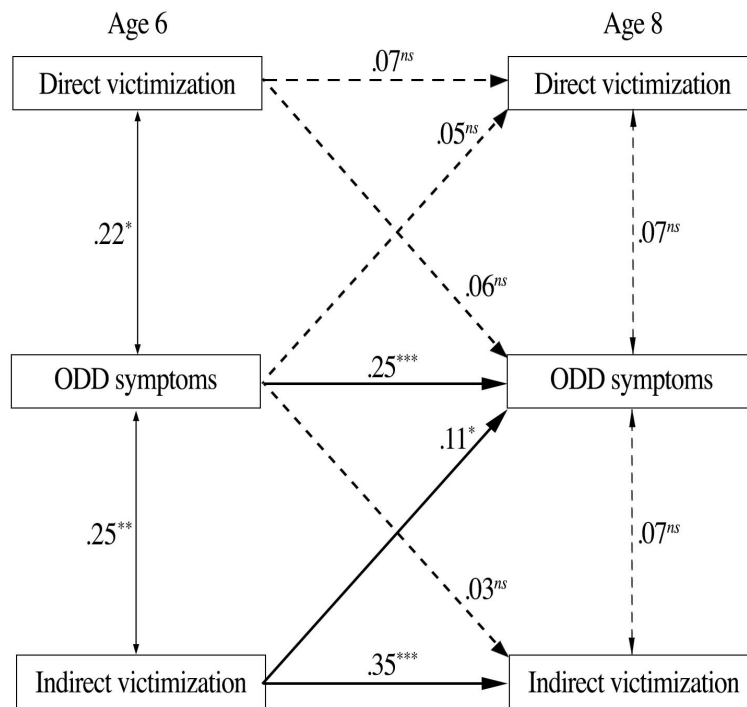


Figure 2. Bidirectional relations between victimization and symptoms of ODD from age 6 to 8.



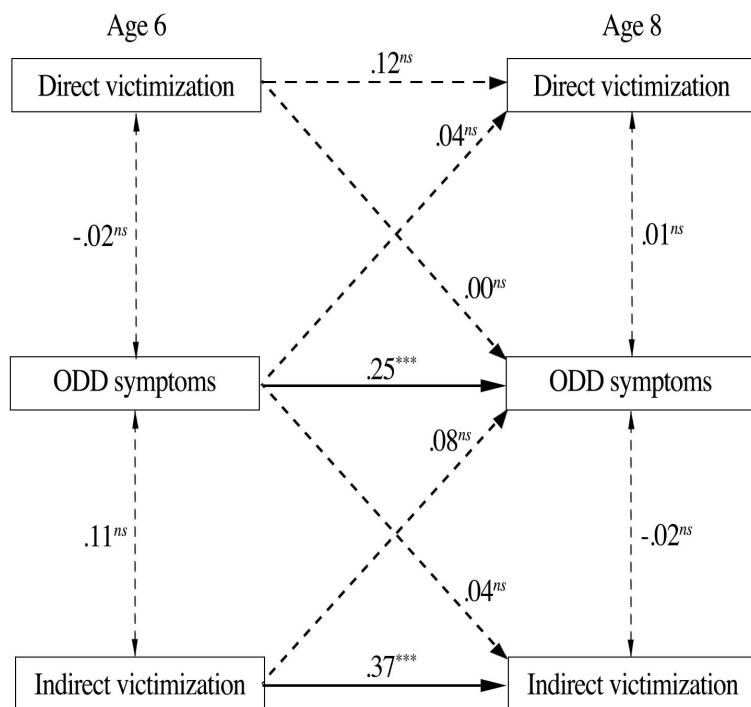
Note: Significant paths are presented with straight lines, dotted lines represent non significant paths. Ns = non significant. All coefficients displayed are standardized.

Figure 3. Bidirectional relations between symptoms of ODD and direct and indirect victimization from age 6 to 8. Subgroup analyses for boys only.



Note: Significant paths are presented with straight lines, dotted lines represent non significant paths. Ns = non significant. All coefficients displayed are standardized.

Figure 4. Bidirectional relations between symptoms of ODD and direct and indirect victimization from age 6 to 8. Subgroup analyses for girls only.



Note: Significant paths are presented with straight lines, dotted lines represent non significant paths. Ns = non significant. All coefficients displayed are standardized.