Peer relationships and quality of life

Associations between popularity, reciprocal friendship and self-reported quality of life in 11-12 year-olds

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Peer relationships and quality of life – Associations between popularity, reciprocal friendship and self-reported quality of life in 11-12-year-olds.

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Abstract

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Social interactions are fundamental for our development and vital for our existence. Thus, it is reasonable to assume that social interactions play a significant role in what could be defined as “a good life”. Findings from existing studies on children’s quality of life have shown that peer relations are associated with both positive and negative outcomes. Positive aspects of peer relations, and especially friendship, are considered to promote one’s quality of life, while negative aspects decrease children’s quality of life. The overall aim of this master thesis was to examine the associations between peer relations and children’s quality of life. More specifically, it focused on associations between popularity and friendships and self-reported quality of life in 11-12-year-olds.

The current study was based on data collected for a larger ongoing research project – “The Health Oriented Pedagogical Project” (HOPP). Principal investigator of the project is Per Morten Fredriksen (Kristiania University College, Department of Health Science, Oslo; Norway). At the baseline in 2015 there were 2297 children from 6 to 12 years old who participated in the project. The HOPP is a longitudinal intervention study with multi-informant and multi-method design.

Results show that both popularity and reciprocal friendship had a positive association with children’s quality of life. Number of nominations (both for popularity and reciprocal friendship) played a significant role for mentioned above associations. Findings from the current study contribute in contemporary research focused on children’s quality of life and may imply that schools can contribute beneficially in implementing interventions aimed to promote children’s quality of life.
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1 Introduction

Social interactions are fundamental for our development and vital for our existence. It is reasonable to assume that social interactions play a significant role in what could be defined as “a good life”. Indeed, numerous studies have shown that social relationships play an important role for self-reported well-being (e.g. Ben-Arieh, Casas, Frønes, & Korbin, 2014; Rubin, Bukowski, & Parker, 2006; Rubin, Bowker, McDonals, & Menzer, 2013).

This thesis focuses on the role of peer relations (popularity and friendships) and quality of life in children aged 11-12 years old. To date research on peer relationships and well-being has usually focused on either adolescence or young adults, thus less is known about such association in middle childhood (e.g. Ben-Arieh et al., 2014). Therefore, more research on associations between peer relations and children’s quality of life is needed.

Data from research based on adult populations indicate that social relations (family and friends) essentially contribute to adult’s well-being (Holder, 2012; Lyubomirsky, Sheldon, Schkade, Candland, & Baumeister, 2005). Thus, it is logical to assume that the same might yield for children as well. However, questions arise as to what degree these findings could be generalized to middle childhood, is there any differences or not? To answer these questions, data based on a child population, needs to be collected in order to compare it to findings from adult research. On the other hand, children at different age are at different stages of their development (physiologically, psychologically and socially), thus the role of peer relations, specifically popularity and friendship, might have a different impact on children themselves and their quality of life.

It has already been established that functions of friendship vary with age (e.g. Dunn, 2004), but much less is known about its impact on children’s quality of life. In fact, most of the research that has been conducted to date and that has examined children’s quality of life, is based on research sample of children with various physical or psychological impairments, i.e. they carry a diagnosis, for example, cancer (Eilersten, Jozefiak, Rannestad, Indredavik, & Vik, 2012), obesity (Herzer, Zeller, Rausch, & Modi, 2011), ADHD (Schei, Jozefiak, Nøvik, Lydersen, & Indredavik, 2016). Therefore, there exists a gap between the research focusing on ill-being and the research examining quality of life based on sample from a normal population. The current study contributes to the latter one by examining associations between
popularity, friendship and children’s self-reported quality of life among representative normal sample of children. The knowledge about what is typical for normal population of children might be beneficial for developing intervention programs, and for other health-related research.

There has also been a tradition to primarily focus on negative correlates and consequences of peer relations, such as peer rejection, bullying, and peer victimization in children (see Rubin et al., 2006). It was not until more recent that an emerging number of studies started to focus on well-being in children from general population (e.g. Ben-Arieh et al., 2014; Rubin et al., 2013). The overall aim in this thesis is to examine the associations between peer relations and children’s self-reported quality of life, in a large representative population based sample.

In the following sections I start with clarifying terms related to popularity, friendship and quality of life. Further, theories relevant to peer relations and quality of life will be reviewed, as well as existent empirical data. Children are engaged in different types of peer relations. This thesis focuses on two of them – popularity and friendship.

1.1 Operationalization

Popularity and friendship are two related phenomena, but are also distinct and separate ones, and one cannot be substituted by the other and vice versa (Bukowski, Hoza, & Boivin, 1993; Dunn, 2004; Dunn & McGuire, 1992; Fink, Begeer, Peterson, Slaughter, & Posnay, 2015; Furman & Robbins, 1985). I am going to use terms ”popularity” and ”friendship”, ”reciprocal friendship” when I refer to phenomena separately and ”peer relations” when I refer to them together.

Friendship

Many definitions of “friendship” emphasize the fact that this type of relationship is typically viewed as voluntarily and mutual (e.g. Bagwell, Newcomb, & Bukowski, 1998; Dunn, 2004; Newcomb & Bagwell, 1995). Newcomb and Bagwell (1995) define friendship as mutual dyadic relationship that is different from other peer relations in its level of affection. The notion that friendship is assumed to be mutual relationship doesn’t represent the whole spectrum of friendship relationships: not all friendships are created equal and definitely not all friendships are reciprocal by default. As a result, researchers distinguish between
reciprocal and unilateral friendships (Ladd, Emerson, & Scarr, 1984; Lodder, Scholte, Goossens, & Verhagen, 2015; Sijtsema, 2016). A friendship can be described as reciprocal when two children mutually nominate each other as friends while unilateral friendship occurs when a child consider another person as a friend but doesn’t get a reciprocated nomination in return (Asher, Guerry, & McDonald, 2014). Studies of friendship nominations report that 10 to 25 per cent of children aged from 8 to 15 years old don’t have reciprocal friendship nomination (Ostberg, 2003; Parker and Asher, 1993; Rose, 2002). It is reasonable to assume that reciprocated friendship outcomes would differ from unilateral friendship outcomes (Hartup, 1996).

**Popularity**

*Popularity,* has been defined as “a multifaceted construct that is characterized by the level of likeability among one’s peers, number of friends, and how well an individual gets along with others” (Bunt & Donnellan, 2015, p. 151). Researchers often distinguish between sociometric and perceived popularity (Cillessen, 2011; Cillessen & Bellmore, 2011; Parkhurst & Hopmeyer, 1998, Rubin et al., 2006). They argue that sociometric popularity (or peer acceptance) captures the individual level of the dyadic relationships between peers while perceived popularity captures the group level of the relationships (social status of a child in the group of peers). Popularity is described as sociometric when the question “Who do you like/dislike most?” is posed, whereas perceived popularity is characterized by “Who do you think is popular?” (Rubin et al., 2006). In this thesis sociometric popularity has been measured.

Sociometric popularity constitutes what Bagwell et al. (1998) refer to as “peer acceptance” and “peer rejection.” Thus, it refers to the degree in which the child is liked by peers. Traditionally, popularity is accessed with the help of sociometric measures. Friendships are also measured by using a similar set of methods – friend nominations – with the difference that the reciprocity is also measured. Reciprocated friendships differ from other peer nominations as they reflect intimate, voluntarily relationships and are characterized by a special emotional connection (e.g. Dunn, 2004; Parker & Asher, 1993). Similar findings have been reported by Fink et al. (2015). They found that friendship and popularity were different phenomena: 53% of children who had low popularity scores had a reciprocal friend while 23% of children with high sociometric status had no reciprocal friend.
Quality of life

*Quality of life* is an interdisciplinary term that is widely used by sociologists, economists, psychologists, and psychiatrists, but no consensus currently exists among scholars what exactly the term refers to. Some researchers point out that the term has been used from very specific such as health-related to very wide e.g. well-being, living conditions (Gasper, 2010; Helsedirektoratet, 2015; Svaavardsdottir & Orlysgsdottir, 2006). Gasper (2010) argues that the term ”well-being” refers to a description or perception of one’s own experience, while “quality of life” describes contexts and circumstances of that experience. The author emphasizes that the term “quality of life” is usually used in literature about living conditions and health related topics while in psychological literature authors prefer to use the term “well-being”. Other researchers regard both “well-being” and “quality of life” as interchangeable and use them as an umbrella-term for both objective indicators (e.g. living conditions) and subjective indicators (experiences, feeling and meanings) (Barstads, 2014; Michalos, 2008). Frey and Stutzer (2009) define “quality of life” as to what degree a person perceives his/her life as desirable. Norwegian Directorate of Health in its book “Well-being på norsk” (2015) defines “quality of life” simply as “subjective experience of feeling good” (about one’s life). The definition proposed by The Norwegian Institute of Public Health (NIPH) is in concordance with the one above, and NIPH suggests that: “quality of life means to experience joy and meaning, vitality and satisfaction, sense of belonging and safety, use personal strengths, feel interest and engagement” (Nes, 2017). In this thesis the term “quality of life” refers to children’s subjective perception of his/her life as desirable (or not) as a whole, at the same time, such terms as “happiness, “life satisfaction”, “well-being” are also used when referring to relevant studies where authors initially used these terms in their research.
1.2 Theoretical perspectives on peer relationships

Already in the first part of 20th century such psychologists as Piaget (1932), Mead (1934), Vygotsky (1978), and Sullivan (1953) discussed the importance of peer relationships for children’s development. Experiences with peers evolve within children’s development – they become more complex, diverse, and sophisticated. The role, which peers play in children’s life, has been examined within different theoretical frameworks.

Cognitive theorists emphasize the role of peer relationships for a cognitive development of a child. Piaget (1932) distinguished peer relationships as opposed to relationships with parents, based on the idea that peer relationships can be described as more balanced in power and egalitarian. This equality in relationships makes it possible to develop abilities to understand other’s thoughts, emotions and intentions (Mead, 1934; Piaget, 1932). Peer relationships also promote development of self-reflect (Mead, 1934). Through interactions with peers children learn and adopt various patterns and models of social behavior, as well as rules and norms (Bandura, 1977).

These perspectives on peer relationships and their role in child’s development have given modern scholars a solid ground to build their models on, such as transactional models of development, proposed by Rubin et al. (2013). They propose that the child characteristics, the family characteristics, the quality of relationships within and outside of the family, culture, stress and social support, all these factors would determine the relationships the child establishes with peers. The process is dynamic and multidirectional, thus, the child is viewed as an active agent of the social environment. Further, authors suggest that development could go in two directions: a pathway to psychological adaptation and a maladaptive pathway. The first one starts with secure parent-child relationships that with time promote and stimulate engagement in establishing positive relationships outside of the family. Thus, by expanding the environment for social interactions a child acquires various social skills (e.g. understanding others, problem solving). The secure relationships with parents represent the source of support and guidance in dealing with various challenges with peers when they occur in more adaptive way. Hence, for transactional models it is essential to view the model as a whole with all its components constantly interacting and influencing each other. The maladaptive pathway is characterized by difficult temperament demonstrated by a child and/or parents, development of insecure parent-child relationships, unfortunate parenting
style (e.g. authoritarian), and family stress. All these factors are believed by authors to contribute in incompetent behaviors toward peers, which may result in peer rejection and other developmental maladjustments (Rubin et al., 2013).

1.3 Theoretical perspectives on quality of life

Quality of life refers to what can be characterized as optimal functioning and experience and simply described as a good life. (Helsedirektoratet, 2015). Western philosophical perspectives on the quality of life can be divided in two different, yet related approaches: hedonic and eudemonic. Hedonic approach emphasizes the importance of subjectively determined positive experiences, feelings, and evaluations related to pleasure and happiness, while eudemonic approach focuses on experiences that are objectively good for person (e.g. personal strengths and potentials, meaning in life) (McMahan & Estes, 2012). Existing empirical research implies that eudemonic approach may be more significant for quality of life than hedonic one. For example, findings from McMahan and Estes study (2012), who examined associations between both hedonic and eudemonic dimensions and adults’ quality of life, indicated that eudemonic approach seemed to be more appropriate for the quality of life. Peer relationships might provide experiences that are beneficial for one’s development; therefore this study incorporates the eudemonic understanding of the quality of life.

1.4 Peer Relationships and Quality of Life

Research suggests that peer relations influence children on individual, intrapersonal and general adjustment levels (Rubin et al. 2013). Moreover, it is well established that peer relations are important to social, cognitive and emotional development of children, youth, and adults. Friends provide a context in which we learn necessary social skills and serve a source of social support (Bagwell et al., 1998; Casas, Figuer, Gonzales, & Malo, 2007; Dunn, 2004; Fink et al., 2015; Hartup, 1996).

Being accepted by peers becomes especially important for children during middle childhood (e.g. Rubin et al., 2006). Research suggests that children prefer to spend time with those who are similar to them in age, gender, behavioral patterns, and ethnicity (Abecassis, Hartup, Haselager, Scholte, & Van Lieshout, 2002). During middle childhood most of peer interactions happen within cliques (Rubin et al., 2006). Being a clique member has been associated with psychological well-being and constructive coping with stress (Hansel, 1981).
By the time of transitioning to adolescence, friendships represent unique relationships outside of the family where adolescents are able to develop social identities, acceptance, connectedness to others, at the same time providing arena and various paths to develop autonomy from their parents.

Traditionally, research primarily focused on the negative consequences related to peer relationships (e.g. peer rejection, bullying, victimization), however, for the past two decades there has emerged a body of research where the emphasis started to shift from focusing on dysfunctional outcomes to promoting positive aspects of peer relationships (e.g. Rubin et al., 2006; Rubin et al., 2013). Nevertheless, findings from existing studies on children’s well-being have shown that peer relations are associated with both positive and negative outcomes. Positive aspects of peer relations, and especially friendship, are considered to promote one’s well-being (e.g. Bukowski et al., 2011, Rubin et al., 2006; Rubin et al., 2013) while negative aspects decrease children’s well-being (e.g. Hodges, Boivin, Vitaro, & Bukowski, 1999; Ladd, 2009; Laursen, Bukowski, Aunola, & Nurmi, 2007; Rubin et al., 2013, Schwartz et al., 2000). Findings from some studies provide evidence for a long-term effect of peer relationships on children’s adjustment and development (e.g. Dunn & McGuire, 1992; Hay, Payne, & Chadwick, 2004; Rubin et al., 2013). Furthermore, there has not yet been agreed on which direction the associations between peer relations and well-being goes. That is, the associations may be bidirectional, which means that there is still uncertainty over whether peer relationship influence quality of life or whether children who report high quality of life also have better relationships with peers. Recent empirical work suggests that there may be a bidirectional pattern between well-being and peer relationships. For example, Dougherty (2006) in her meta-analytic review points out that the relationships between social status and emotional well-being might be bidirectional, but more studies with a longitudinal design are needed in order to examine causality and directionality.

Associations between peer relationships, more specifically, popularity and friendships, and children’s self-reported quality of life are aimed to be examined in this master thesis, but first let’s proceed by reviewing the existing studies on the relevant topics.
1.5 Popularity and Quality of Life

Kindergartens and schools represent the perfect conditions for children to establish and maintain relations with peers. As stated by Sullivan (1953), the importance of peer relations increases during middle childhood, therefore the role of peer may have a stronger impact on the well-being in children as they grow older. Findings from empirical research also suggest that during the middle childhood children become concerned about being liked by peers and belonging to a certain peer group (e.g. Rubin et al., 2006).

Peers and teachers perceive their popular and unpopular classmates in a different way. Well-liked children often are characterized as helpful, good students both by schoolmates, teachers, and parents (Wenzel & Asher, 1995). Popular children are viewed as prosocial, supportive, empathic, communicative, cooperative and academically successful, while unpopular children are aggressive, disruptive, withdrawn and socially anxious (e.g. Cillessen & Bellmore, 2011; Gazelle, 2008; Rubin et al., 2013). Children who are perceived as unpopular, with few nominations, have often been found to have difficulties of establishing friend relationships, and have long-term psychological difficulties (Nangle, Erdley, Newman, Mason, & Carpenter, 2003). Moreover, findings from studies examining negative outcomes of peer relations show that being rejected by peers is associated with miscellaneous negative outcomes (e.g. poor school adjustment, behavioral deviations and maladaptations, psychopathology) that may have a long-term effect and consequences for their psychosocial adjustment (Rubin et al. 2013).

Being accepted by peers, on the other hand, is usually associated with later positive outcomes, sociable behavior, satisfactory school achievements and adjustment, as well as with lack of pathology (Cillessen, 2011). Disliked children, on the other hand, have been found to have lower levels of externalizing problems (Sandstrom & Cillessen, 2006) and higher levels of behavior problems (Mayeux, Sandstrom, & Cillessen, 2008).

Research on the associations between one’s quality of life and popularity have been relatively inconsistent. For example, Ostberg (2003) found associations between child’s status among his/her peers in the class were positively correlated with one’s quality of life: the higher popularity the higher well-being. Similar findings have also been reported in studies based on children age 9 to 12 years and adolescents sample (Holder & Coleman, 2009; Proctor, Linley,
& Maltby, 2010). Researches found that adolescents who were popular among peers reported higher level of life satisfaction as compared to less successful classmates (Proctor et al., 2010), and popularity predicted higher level of self-reported happiness (Holder & Coleman, 2009). Kasser and Ahuvia (2002), examined popularity and happiness in a sample of university students. They found that associations between popularity and happiness had a negative correlation. Those students who valued their status among peers the most reported lower level of happiness as compared to other students. However, not all studies have found popularity to have only positive outcomes. For example, in a study by Demir and Urberg (2004) no direct associations was found between popularity and well-being. In other words, findings are somewhat mixed, but this may only reflect the different age group, or the use of different measurements. Therefore this study will add to the existing literature by focusing on quality of life and popularity and friendship in a huge community-based population study.

To sum up, existing data on associations between one’s popularity and quality of life suggests low to moderate associations (e.g. Holder 2012). On the other hand, friendship’s contributions into one’s quality of life are considered much more significant (Ben-Arieh et al., 2014).

### 1.6 Friendships and Quality of Life

Many studies have confirmed that friends represent an important domain of children’s well-being (Bukowski, Newcomb & Hartup, 1998; Goswami, 2011; Parker & Asher, 1993). In Great Britain The Good Childhood Report 2012 (Children’s society, 2012) disclosed that children who were happier with their friendships had significantly higher well-being. It also showed that negative aspects of friendship negatively correlated to children’s well-being. It has been reported that number of friends was one of the factors predicting higher level of reported life satisfaction (Casas et al., 2007). Similar findings have been reported by Holder and Coleman (2009). They found that having many friends predicted higher level of happiness as compared to those with few friends. Friends might also be one of the factors that contribute to overall life satisfaction in adolescence (Demir & Weitekamp, 2007). A recent study conducted by Goswami (2012) investigated how children’s social relationships could be linked to children’s subjective well-being. Results of this study showed that positive aspects of friendship promoted subjective well-being, while negative aspects reduced subjective well-being.
The amount of time spent with friends increases during late childhood and adolescence (Rubin et al., 2006) which is considered to be an indicator of why friends might have stronger influence on each other during that period. Findings from different studies indicate that group of peers and best friends differ in their level of influence on adolescents (e.g. Epstein, 1983). It can be due to the fact that adolescents spend more time with their best friends than with other peers. Other researchers argue that peer groups influences children and adolescents positive adjustments, because a greater network of friends provides a greater number of opportunities for forming positive relations outside of the family (Lansford, Criss, Pettit, Dodge, & Bates, 2003). However, having at least one friend have been found to promote prosocial behavior and psychological well-being (Berndt & Keefe, 1995; Bukowski et al., 1998; Parker & Asher, 1993). Findings from different studies suggests that having a reciprocal friend is important for positive psychological well-being, but it is especially important for those who are at risk for maladaptation (Bowker, Thomas, Norman, & Spencer, 2011). A lack of friends is associated with depression and other mental health problems, which in its turn tend to decrease quality of life (e.g. Rubin et al., 2006). Recent studies show that youth with reciprocal prosocial friends were more than twice as likely to have positive psychological functioning as those youth reporting no special friend (Hopkins, Zubrick, & Taylor, 2014), and they were found to be less lonely (Asher et al., 2014). Thus, it seems that the number of reciprocal friend nominations is associated with children’s overall quality of life. However, although there have been some studies examining children’s social relations and well-being/happiness (Demir & Weitekamp, 2007; Goswami, 2012; Holder & Coleman 2009; Ostberg, 2003; Uusitalo-Malmivaara & Lehto, 2013), much less attention has been given to children’s quality of life. Participants in the majority of the studies investigating children’s quality of life usually have various physical or psychological impairment and diagnosis such as cancer (Eilersten et al., 2012), ADHD (Schei et al., 2016), deafness/hearing loss (Fellinger, Holzinger, Sattel & Laucht, 2008) and other. Therefore more knowledge on quality of life in a population-based sample would be an important addition to the current literature.

Demir et al. (2007) found that best friends predicted happiness in a sample of college students. They suggested that best friends are often valued the most; therefore a person would gain more from such relationships. Other studies had further found that having more friends was considered to be a key factor for increasing their own happiness (e.g. Uusitalo-
Malmivaara & Lehto, 2013). Children who had two or more close friends reported higher level of happiness as compared with children who had only one or no close friends (Jover & Thoilliez 2010; Uusitalo-Malmivaara & Lehto, 2013). This is in contrast to findings from Hodges et al. (1999) study suggest that there is no difference in children’s adjustments if they have only one friend or many. In a meta-analysis of studies focusing on reports from elderly, Pinquart, Sörenson and Light (2000), found that the quantity of social contacts were associated with subjective well-being.

1.7 Quality of life and demographic factors

It has been estimated that for adult population demographic factors like age, income, gender, education, and so on explain from 10 to 15 per cent of the variety in quality of life variable. (see Sirgy, 2012 for a review).

Income

Holder and Coleman (2009) have examined relationships between various demographic factors and children’s happiness. They found that demographic variables show low to moderate correlation to children’s happiness. Participants in their study were children 9 to 12 years old. However, reported findings from researches seem to be mixed. Most of the studies report that people with higher incomes, on average, report higher level of life quality compared to those who have lower income (e.g. Easterlin, 2011; Diener & Seligman, 2004; Pinquart et al., 2000; Sirgy, 2012), at the same time as other researchers bring to our attention the fact that the difference in reported happiness between very wealthy people and a control group was significant but rather low (Diener, Horrowitz & Emmons, 1985, Rojas, 2011). A large-scale study by Levin et al. (2011) examined the relationship between life satisfaction of the 13-year-old adolescents and family’s wealth. Adolescents from 35 countries participated and findings showed a strong relationship between family’s wealth and life satisfaction reported by adolescents. On the national level there had also been observed a positive association between life satisfaction and national income. The association between income and quality of life has on the other hand been found to diminish over time (Easterlin, 2011, Sirgy, 2012). There has been some evidence suggesting that an increase in income contribute to happiness (especially in lower income countries or countries with a big gap between poor and reach people), but beyond a certain level income doesn’t seem to have an impact on self-reported quality of life (e.g. Dolan et al., 2008; Frey & Stutzer, 2009).
**Age**

Many studies with adult population sample report U-shaped relationship between age and quality of life, with a minimum at middle age and then going up again (see Frey & Stutzer, 2009). Some researchers suggest that subjective well-being increases or at least doesn’t drop with age (Argyle, 1999, Diener et al., 1999), while others conclude that life satisfaction doesn’t decline much during adulthood, but drops significantly among those who are over 70 years old (Baird et al., 2010). In other words, level of self-reported quality of life do change with age, but it seems like researchers had focused mostly on adults: therefore, more research based on children is needed.

**Gender**

Majority of the researchers based on adult population, agree that gender might have an effect on reported levels of quality of life since it has been demonstrated that women report higher level of happiness than men (see Sirgy, 2012), at the same time they admit that effects of gender is rather caused by its interplay with other factors influencing subjective well-being than by gender itself (e.g. Dollan et al., 2008). Research findings from studies based on children and adolescents report no gender differences in subjective happiness (Holder & Coleman, 2009; Uusitalo-Malmivaara & Lehto, 2013).

**Other factors**

There exists other demographic factors, like family composition, education, work, etc., that have been associated with quality of life, but taken all together demographic factors in total are responsible for not more than 15 % of the variance in self-reported quality of life (Holder & Coleman, 2009; Sirgy, 2012) and besides income their effect on quality of life are reported weak or even absent, but they tend to interact with other factors, like, for example, gender, age, and religion, in predicting one’s quality of life (see Sirgy, 2012). Holder (2012) comes to a conclusion that findings from studies based on children samples indicate that demographic variables associate weakly with happiness.
1.8 Research questions

The overall aim of this thesis is to examine the associations between popularity and friendships and children’s self-reported quality of life. Based on reviewed theory and empirical research a hypothesis has been proposed that children who have at least one reciprocal friend would report higher quality of life.

The current master thesis examines associations between quantitative components (i.e. number of nominations) of popularity and friendship and children’s quality of life. To my knowledge, this study will be the first one to examine associations solely between friendships’ variables and self-reported quality of life, based on a sample of a representative normal children population 11 to 12 years old. More specifically, this thesis will examine the following research questions:

1. Is children’s popularity associated with higher self-reported quality of life?
2. Do children with at least one reciprocal friend report higher quality of life as compared to children with no friends?
3. Are differences in number of reciprocal friend nominations (none, one, two, three or four) related to differences in children’s reported quality of life?
4. Are there gender differences in self-reported quality of life?
5. Does parent’s level of education influence children’s self-reported quality of life?

With the starting point at existing relevant literature on this topic, it is expected to find associations between popularity, reciprocal friendship and self-reported quality of life. Moreover, it is expected that children with at least one reciprocal friend would report higher quality of life than children with unilateral friends or with no friends. There is further an expectation that the majority of the children would report satisfactory and high levels of quality of life, since the sample is a population-based community sample.
2 Method

The current master thesis is based on data collected for a larger research project – “The Health Oriented Pedagogical Project” (HOPP). Principal investigator of the project is Per Morten Fredriksen (Kristiania University College, Department of Health Science, Oslo, Norway). The main goal of the study is to examine the effect of increased physical activity as a part of the pedagogical approach (both from health related and academic perspectives). The HOPP research project is funded by several sources including Horten municipality, Kristiania University College, Institute of Health Sciences, Norwegian Order of Odd Fellows, and Norwegian Fund for Post-Graduate Training in Physiotherapy. The Regional Committees for Medical and Health Research Ethics approved the study protocol (2014/2064/REK sør-øst).

2.1 Design

The Health Oriented Pedagogical Project (later referred to as HOPP) is an ongoing, prospective longitudinal intervention study, started in 2015. The study was designed as a case-control physical activity intervention in all (seven) elementary schools in the Horten and two control schools in Bærum and Asker. The study has a multi-informant and multi-method design. At the baseline in 2015, a total number of all students in all schools was 2817, where 2297 (82%) participated in the project. Children from 1st to 6th grade were recruited to participate in the study. All participants are followed longitudinally from baseline in spring 2015 for as long as they stay in elementary school (2015-2021) (Fredriksen, Hjelle, Mamen, Meza, & Westerberg, 2017).

Data for the HOPP project is a multi-method project including computer-based questionnaires and physiological and academic tests. Data collection will be administrated at local school settings each year. All questionnaires and tests are conducted by trained research assistants.

Data in the current study is based on data gathered during the second year of data collection (2015-2016), because the information about friendship and its variables had not yet been included at the baseline of the project. Due to the project design, some tests are limited to certain age groups. Our thesis is based on children’s answers about their quality of life,
number of friends, and popularity. The number of participants, for this master thesis, consists of 691 children from 11 to 12 years old (For more detailed information about number of participants see Appendix I).

2.2 Recruitment

Seven elementary schools in Horten municipality, Vestfold County, Norway and two schools in Akershus County took part in the H OPP project. All schools in the Horten municipality were enrolled in the H OPP intervention program, while two schools in Akershus County were control schools, and took part solely in annual testing.

During the year 2014, there was an informational campaign about the H OPP for parties involved including authorities, school principals and teachers, and children’ parents. For a child to be considered as a participant of the project written parental consent had been required.

Elementary education is compulsory in Norway, and this gives an opportunity to reach all children, regardless of their socio-economic background. All schools were public, and the number of pupils in the schools varied from just above 100 (Fagerheim school, Horten municipality) to almost 600 children (Eiksmarka school, Bærum municipality).

2.3 Measures

2.3.1 Quality of life (QoFL) – outcome variable

Quality of life was measured using the Norwegian version of the Inventory of Life Quality in Children and Adolescents (ILC; Mattejat & Remschmidt, 2006, Jozefiak 2012; Jozefiak, Larsson & Wichstrom, 2009). Children reported on seven items addressing different aspects of quality of life: school, family, social integration, interests and recreational activities, physical health, mental health, and global quality of life item (Appendix II). Each item is rated on a 5-point scale from 1 – ”very good” to 5 – ”very bad” using ”smiley” icon as an anchor. The mean score was calculated, and items were reversed coded if necessarily in such a way that the higher the mean score the higher is reported quality of life. Children used computers in the school setting to answer questions. The reliability showed acceptable Cronbach’s alpha .66, which is similar to previous studies examining the psychometric properties of the Norwegian version of the ILC on general population of children, reporting
Cronbach’s alpha .63 (e.g. Jozefiak et al., 2009). Jozefiak and colleagues (2009, 2012) have previously reported satisfactory norms and measures of validity and reliability of Norwegian version of the ILC.

Originally, the ILC questionnaire was developed as a practical instrument that would be able to access children’s subjective quality of life over the past week. Target group of the ILC is children and adolescents with mental and somatic disorders aged from 6 to 18 years, but lately it had also been administrated on the general population samples (Jozefiak et al., 2009). The Norwegian adaptation of the ILC was translated by Jozefiak and Linnemann in 2008 and was based on an original German ILC version (Mattejat & Remschmidt, 2006). The Norwegian version of the ILC was approved by original authors.

2.3.2 Reciprocal friendship and popularity variables

Information about children’s friends had been accessed by using a modification of the “The Bus Story” procedure developed by Perren and Alsaker (2006). Children were given the following instruction: “You are going on a trip. Whom of your friends from your class could you think of inviting with you?” According to the instruction, they could nominate up to five friends from the class (both girls and boys), but children actually nominated no more than four friends.

Friendship and popularity ranking was examined by different procedures to investigate the meaning of popularity, directionality and reciprocity of the nominations. All produced variables required manual scoring - looking at each child’s response one by one and counting for each nomination and its directionality within one class.

Based on procedures from previous studies (e.g. Ostberg, 2003, Parker & Asher 1993) a sum score of the number of nominations was used for each child in order to compute a popularity variable. It varied from 0 to 9 nominations. In the next step reciprocal friendship variable was computed. It was counted as a number of reciprocal friend nominations. By analyzing children’s popularity nominations we were able to detect directional links between nominated children and the child who nominated those children as his/her friends and whether those links were reciprocal or not, and if they were reciprocal then to what degree. As a result, the following scale had emerged: ‘0’ for those who didn’t have any reciprocal friend
nominations, ‘1’ meant that the child got 1 reciprocal scoring back from those who had been nominated by him or her, ‘2’ indicated that 2 out four nominated friends nominated him or her as a friend as well, ‘3’ – the child was nominated back as a friend by 3 out 4 of his/her friends on the list, finally, ‘4’ means an absolute reciprocal match as it describes the situation when the child was nominated as a friend by all the children that he or she nominated as friends.

2.3.3 Control variable
All children provided the information about their age and gender. In addition, both mothers and fathers were asked about their level of education that had been coded in 4 categories: elementary school (1), high school (2), university degree up to 3 years (3), and university degree 4 years and more (4).

2.4 Preliminary analysis
The analyses of collected data were made by using IBM SPSS Statistics, version 22. Prior to the main statistical analyses, the outcome variable (quality of life) was examined for its distribution, outliers, missing and reliability.
For missing data pairwise exclusion had been applied (Pallant, 2013). As for normal distribution’s tests, a skewness of -1.00 and a kurtosis of 1.21 were found. It means that the scores are clustered to the right of the high values, which is not unusual when the majority of participants report high level of quality of life. In normative samples, low levels of self-reported quality of life are rare (e.g. Jozefiak et al., 2009). The positive kurtosis value indicates that the distribution is clustered in the center, shaped like a peak. These features are reported to be common for cases when the large samples are utilized (Tabachnick & Fidell, 2013). A Kolmogorov-Smirnov statistic showed a significant p-value of .000 suggesting that the distribution is significantly different from a normal distribution, which is not unusual for the large samples (Pallant, 2013, Tabachnick & Fidell, 2013).
Histogram (Appendix III) confirms the negative skew. In Normal Q-Q plots for quality of life variable a deviation tale of lower values from the zero line is observed (Appendix III). Data was also checked for outliers.
Maximum of Cook’s distance was .036, which is under the critical 1.0 (Tabachnik & Fidell, 2013).
Chronbach’s alpha coefficient was used as an indicator for the internal consistency of the quality of life scale. It showed a good internal consistency of .63, which is within .48-.76 that is considered to be high for questioners with less then 10 items (Pallant, 2013).

In order to perform one way-way ANOVA, the Levene’s test for Equality of variances was conducted. From its results, we can reject the null hypothesis that there are no differences in the variance between the groups and accept the alternative hypothesis that there is a difference between the groups.

### 2.5 Statistical analysis

Descriptive analysis was made in order to examine the basic features of the variables. Followed by bivariate correlation analysis to determine if there exist any statistically significant correlations between variables and to examine their strength. Further, hierarchical linear regression analysis was conducted to find out if popularity and number of reciprocal friends were associated with self-reported quality of life. The demographic variables like age, gender and parents’ level of education have also been included in the analysis. In was performed a set of hierarchical regression analyses – one with popularity as an independent variable and quality of life as dependent, than one with dichotomous reciprocal friendship variable and quality of life, and finally, associations between actual number of reciprocal friend nominations and quality od life was . In order to examine if a gender had an effect on reported by children quality of life an independent t-test was conducted. T-test had been also conducted in order to examine whether having one friend was associated with higher quality of life or not. Further, a series of One-Way ANOVA was performed to determine whether there were any statistically significant differences in reported quality of life between groups of children with different popularity scores, reciprocal nominations and father’s level of education respectively.
3 Results

3.1 Descriptive analyses

The detailed information about descriptive features of variables is presented in Table 1. As it is shown in the table, the majority of participants reported high level of quality of life. Only 9% of the respondents were unpopular, while mean score for popularity was 3 nominations. 16.4% of the children didn’t have a reciprocal friend in the class, at the same time over 75% of children had 1-3 reciprocal nominations, where mean score showed to be approximately 2 nominations. Equal number of girls and boys participated in the study. Majority of their parents had a university degree.

<table>
<thead>
<tr>
<th>Variables</th>
<th>n</th>
<th>%</th>
<th>Mean</th>
<th>SD</th>
<th>Skewness</th>
<th>Kurtosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Quality of life</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>low (1-4)</td>
<td>65</td>
<td>9.4</td>
<td>4.44</td>
<td>.41</td>
<td>-1.00</td>
<td>1.21</td>
</tr>
<tr>
<td>high (4-5)</td>
<td>626</td>
<td>90.6</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Popularity nominations</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>62</td>
<td>9.0</td>
<td>3.08</td>
<td>2.00</td>
<td>.47</td>
<td>-.24</td>
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<tr>
<td>1</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
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<tr>
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<td>136</td>
<td>19.7</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>113</td>
<td>16.4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>77</td>
<td>11.1</td>
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<tr>
<td>6</td>
<td>33</td>
<td>4.8</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>33</td>
<td>4.8</td>
<td></td>
<td></td>
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<tr>
<td>9</td>
<td>4</td>
<td>0.6</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td>3. Number of reciprocal nominations</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
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<td>16.4</td>
<td>1.81</td>
<td>1.20</td>
<td>.09</td>
<td>-.96</td>
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<td>1</td>
<td>180</td>
<td>26.0</td>
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</tr>
<tr>
<td>2</td>
<td>181</td>
<td>26.2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>159</td>
<td>23.0</td>
<td></td>
<td></td>
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<tr>
<td>4</td>
<td>58</td>
<td>8.4</td>
<td></td>
<td></td>
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</table>
### 4. Age (in years)

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
<td>207</td>
<td>29.9</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>484</td>
<td>70.1</td>
<td></td>
</tr>
</tbody>
</table>

### 5. Gender

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Boys</td>
<td>346</td>
<td>50.1</td>
<td></td>
</tr>
<tr>
<td>Girls</td>
<td>345</td>
<td>49.9</td>
<td></td>
</tr>
</tbody>
</table>

### 6. Maternal education

<table>
<thead>
<tr>
<th>Education Level</th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Elementary school</td>
<td>7</td>
<td>1.0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High school</td>
<td>137</td>
<td>19.8</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>University (up to 3 years)</td>
<td>257</td>
<td>37.2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>University (4 years +)</td>
<td>152</td>
<td>22.0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Missing</td>
<td>138</td>
<td>20.0</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### 7. Paternal education

<table>
<thead>
<tr>
<th>Education Level</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Elementary school</td>
<td>12</td>
<td>1.7</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High school</td>
<td>160</td>
<td>23.2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>University (up to 3 years)</td>
<td>222</td>
<td>32.1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>University (4 years +)</td>
<td>150</td>
<td>21.7</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Missing</td>
<td>147</td>
<td>21.3</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### 3.2 Bivariate correlation analyses

Table 2. Correlations between variables

<table>
<thead>
<tr>
<th>Variables:</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Quality of life</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Popularity</td>
<td>.196**</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Number of reciprocal nominations</td>
<td>.238**</td>
<td>.743**</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Education (mother)</td>
<td>.082</td>
<td>.060</td>
<td>.037</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Education (father)</td>
<td>.163**</td>
<td>.129**</td>
<td>.161**</td>
<td>.464**</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Gender</td>
<td>.021</td>
<td>.031</td>
<td>.075*</td>
<td>.100*</td>
<td>.097*</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>7. Age</td>
<td>.016</td>
<td>.065</td>
<td>.054</td>
<td>.057</td>
<td>.010</td>
<td>.028</td>
<td>-</td>
</tr>
</tbody>
</table>

*Note*. bold type *p<.05, **p<.01

Prior to the main analysis, the bivariate correlations between variables had been examined (Table 2). Bivariate correlations mostly showed weak positive associations between
variables. Associations between quality of life and children’s age and gender, as well as level of mother’s education didn’t reach the statistical significance and their Pearson correlation coefficient was close to 0 indicating no associations between variables. On the other hand, popularity, number of reciprocal nominations, as well as father’s level of education had reached the statistical significance with Pearson correlation coefficient under .30. Associations between popularity and quality of life were weakly and positively correlated. Positive and weak correlations were observed between number of reciprocal friend nominations and quality of life. Father’s education also showed a small, albeit significant association with quality of life. The strongest correlation to the quality of life variable showed the reciprocal friend nominations variable, followed by popularity and father’s education.

3.3 Hierarchical linear regression analyses

In order to investigate how popularity and reciprocal friendship contribute to quality of life variable, a series of multiple regression analyses was examined.

3.3.1 Popularity and quality of life

Table 3. Quality of life predicted by popularity variable

<table>
<thead>
<tr>
<th>Variables</th>
<th>Model 1</th>
<th>Model 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>SE</td>
</tr>
<tr>
<td>Popularity</td>
<td>.037</td>
<td>.009</td>
</tr>
<tr>
<td>Age</td>
<td>- .007</td>
<td>.042</td>
</tr>
<tr>
<td>Gender</td>
<td>-.026</td>
<td>.037</td>
</tr>
<tr>
<td>Education (mother)</td>
<td>-.003</td>
<td>.028</td>
</tr>
<tr>
<td>Education (father)</td>
<td>.078</td>
<td>.026</td>
</tr>
<tr>
<td>R square</td>
<td><strong>.032</strong></td>
<td></td>
</tr>
</tbody>
</table>

Note. Bold type *p<.05. **p<.01

When examining whether popularity predicted quality of life, hierarchical regression analyses showed that popularity nominations significantly predicted higher quality of life reported by children. The effect remained to be significant after controlling for potential confounders. Paternal education was also significantly associated with quality of life.
3.3.2 Reciprocal friendship and quality of life

Table 4. *Quality of life predicted by reciprocal friendship (dichotomous) variable*

<table>
<thead>
<tr>
<th>Variables</th>
<th>Model 1</th>
<th>Model 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>SE</td>
</tr>
<tr>
<td>Reciprocal friend nomination</td>
<td>.198</td>
<td>.052</td>
</tr>
<tr>
<td>(dichotomous)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>-.001</td>
<td>.041</td>
</tr>
<tr>
<td>Gender</td>
<td>-.023</td>
<td>.037</td>
</tr>
<tr>
<td>Education (mother)</td>
<td>.002</td>
<td>.028</td>
</tr>
<tr>
<td>Education (father)</td>
<td>.078</td>
<td>.026</td>
</tr>
<tr>
<td>R square</td>
<td>.030**</td>
<td></td>
</tr>
</tbody>
</table>

*Note.* Bold type *p<.05. **p<.01

When examining whether reciprocal friendship (dichotomous) predicted quality of life, hierarchical regression analyses showed that reciprocal friendship (dichotomous) significantly predicted higher quality of life reported by children. The effect remained to be significant after controlling for other demographic variables. Level of father’s education was also significantly associated with quality of life.

3.3.3 Number of reciprocal nominations and quality of life

Table 5. *Quality of life predicted by number of reciprocal nominations*

<table>
<thead>
<tr>
<th>Variables</th>
<th>Model 1</th>
<th>Model 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>SE</td>
</tr>
<tr>
<td>Reciprocal friend nominations</td>
<td>.084</td>
<td>.015</td>
</tr>
<tr>
<td>Age</td>
<td>-.008</td>
<td>.041</td>
</tr>
<tr>
<td>Gender</td>
<td>-.035</td>
<td>.037</td>
</tr>
<tr>
<td>Education (mother)</td>
<td>.004</td>
<td>.027</td>
</tr>
<tr>
<td>Education (father)</td>
<td>.068</td>
<td>.026</td>
</tr>
<tr>
<td>R square</td>
<td>.062**</td>
<td></td>
</tr>
</tbody>
</table>

*Note.* Bold type *p<.05. **p<.01
When examining whether number of reciprocal nominations could predict quality of life, hierarchical regression analyses showed that number of reciprocal nominations significantly predicted higher quality of life reported by children. The effect remained to be significant after controlling for potential confounders. Paternal education was also significantly associated with quality of life.

3.3.4 Summarized results from multiple regression analyses
Results showed that both popularity and reciprocal friendship were positively correlated to quality of life variable even when controlled for age, gender and parents’ education. All regression models reached statistical significance level. Out of all regression models, the model that included reciprocal friend nominations contributed best to explain the variance in the quality of life variable. Age and gender didn’t have any statistical significant influence on quality of life.

3.4 Independent t-test

3.4.1 Quality of life and reciprocal friendship
An independent t-test was conducted to compare children’s reports on quality of life in having a reciprocal friend and not having a reciprocal friend conditions. From the results of Levene’s Test for Equality of Variances, we can reject the null hypothesis that there is no difference in the variances between the groups and accept the alternative hypothesis that there is a difference between the groups. There was a significant difference in the scores for having a reciprocal friend (M=4.47, SD=0.38) and not having a reciprocal friend (M=4.30, SD=0.48) conditions; t(141)=3.5, p=.001. These results suggest that having a reciprocal friend has an effect on children’s quality of live. Specifically, our results suggest that when children have at least one reciprocal friend they report higher quality of life as compared to those who have no reciprocal friends.

3.4.2 Quality of life and gender
An independent t-test was conducted to compare children’s reports on quality of life depending on their gender. There has not been found a significant difference in the quality of life scores for boys (M=4.43, SD=0.40) and girls (M=4.45, SD=0.41) conditions; t(689)=-.54, p=.59. These results suggest that being a boy or a girl doesn’t have an effect on children’s
quality of live. Specifically, our results suggest that children of both genders report similar
level of quality of life.

### 3.4.3 Quality of life and paternal education

Since the linear regression analysis showed that father’s education was significantly
associated with children’s self-reported quality of life, an independent t-test was conducted to
compare children’s reports on quality of life depending on father’s education level: high
school versus university degree. There was a significant difference in the scores for high
school (M=4.34, SD=0.46) and university degree (M=4.50, SD=0.37) conditions; t(232)=
3.78, p=.000. These results suggest that level of father’s education has an effect on children’s
quality of live. In other words, our results suggest that children report on average higher
quality of life when their fathers have a degree from university as compared to those children
whose fathers finished high school.

### 3.5 One-way ANOVA

To answer the research questions whether there were any differences in self-reported quality
of life and peer relation variables, one-way ANOVA group comparison had been performed.

#### 3.5.1 Popularity and quality of life

Table 6. One-way ANOVA: popularity – comparing group

<table>
<thead>
<tr>
<th></th>
<th>SS</th>
<th>Df</th>
<th>F</th>
<th>P</th>
<th>η²</th>
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<tbody>
<tr>
<td>Between groups</td>
<td>5.359</td>
<td>6</td>
<td>5.628</td>
<td>.000</td>
<td>.05</td>
</tr>
<tr>
<td>Within groups</td>
<td>108.562</td>
<td>684</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Total</td>
<td>113.921</td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

*Note: group sizes are unequal*

A one-way between subjects ANOVA was conducted to compare the effect of popularity on
children's quality of life in having no nominations, having one, two three, four, five and six
and more nomination conditions. There was found a significant effect of popularity on
reported quality of life at the p<.001 level for the seven conditions [F(6,684)=5.63, p=.000].
Figure 1. *Mean level of reported QoL by number of popularity nominations*

Post hoc comparisons using the Bonferroni test (Appendix IV) indicated that the mean score for being unpopular (having no nominations at all) condition was significantly different from any other condition (except for having two nominations). In other words, these results suggest that unpopular children tend to report the lowest quality of life compared to those who have got at least one and more popularity nomination from their peers. However, the number of nominations doesn’t seem to play a significant role in this comparison, even though overall tendency for reported quality of life increases with number of nominations (except for two and 6 and more nominations) – see Figure 1.

### 3.5.2 Reciprocal friendship and quality of life

**Table 7. One-way ANOVA: number of reciprocal nominations – comparing group**

<table>
<thead>
<tr>
<th></th>
<th>SS</th>
<th>Df</th>
<th>F</th>
<th>P</th>
<th>η²</th>
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<td>7.027</td>
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<td>11.273</td>
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<td>Within groups</td>
<td>106.895</td>
<td>686</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Total</td>
<td>113.921</td>
<td></td>
<td></td>
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</tbody>
</table>

*Note: group sizes are unequal*

A one-way between subject ANOVA was conducted to compare the effect of number of reciprocal friends on children's quality of life in having no reciprocal friend, having one, two three or four reciprocal friends conditions (due to measuring and scoring procedures, latter condition describes an absolute reciprocity condition). There was a significant effect of
number of reciprocal friends on reported quality of life at the p<.001 level for the five conditions [F(4, 693)=11.34, p=.000].

Figure 2. Mean level of reported QoL by number of reciprocal nominations

Post hoc comparisons using the Bonferroni test (Appendix IV) indicated that the mean score for having no reciprocal friend condition was significantly different than having two, three or four reciprocal friends conditions, while having one reciprocal friend condition didn’t differ significantly from having no reciprocal friend condition. However, having one reciprocal friend was significantly different than having four reciprocal friends and didn’t differ significantly from having no, two or three reciprocal friends. Having two reciprocal friends condition was significantly different from having no and having four reciprocal friends conditions. Further, having three reciprocal friends condition was significantly different from having no reciprocal friend, one and four reciprocal friends conditions, while it didn’t differ significantly from having two reciprocal friends condition. Finally, having four reciprocal friends condition was significantly different from all other reciprocal friend conditions. In other words, these results suggest that when children have reciprocal friends they tend to report higher quality of life compared to those who don’t have any friends. Specifically, the bigger the difference in the number of friends, the bigger the difference in quality of life scores.
3.5.3 Paternal education and quality of life

Table 8. One-way ANOVA: father’s level of education – comparing group

<table>
<thead>
<tr>
<th></th>
<th>SS</th>
<th>Df</th>
<th>F</th>
<th>P</th>
<th>η²</th>
</tr>
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<tr>
<td>Between groups</td>
<td>2.719</td>
<td>2</td>
<td>8.36</td>
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<td>.03</td>
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<tr>
<td>Within groups</td>
<td>76.610</td>
<td>471</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Total</td>
<td>79.329</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note: group sizes are unequal*

Since it was only 10 persons that had elementary school education elementary and high school education were combined together in to high school category. Further a one-way between subject ANOVA was conducted to compare the effect of father’s level of education on children's quality of life in having high school and university degree (up to 3 years and 4 years and more) conditions. There was a significant effect of father’s level of education on reported by children quality of life at the p=.000 level for the four conditions [F(2, 471)=8.36, p=.000].

Figure 3. Mean level of reported QoL by father’s level of education

Post hoc comparisons using the Bonferroni test indicated that the mean score in the reported quality of life in reported quality of life was significantly different for those children whose fathers finished high school, as compared to those who had fathers with a degree from university. However, number of yeas spent at the university didn’t seem to matter, as children, on average, reported exactly the same level of quality of life.
4 Discussion

The overall goal of the current study was to examine associations between popularity and reciprocal friendship and children’s self-reported quality of life. There are two main findings that stand out. First, both popularity and reciprocal friendship had a positive association with children’s quality of life. Second, number of nominations (both for popularity and reciprocal friendship) played a significant role for mentioned above associations.

4.1 Popularity and quality of life

A positive but weak association was found for popularity and children’s quality of life, suggesting that the higher the popularity level among classmates the higher quality of life was reported. This finding is similar to previous studies, which also reported weak but positive associations (e.g. Holder, 2012, Ostberg, 2003,). Although, the main tendency was that quality of life increased with the number of popularity nominations, the findings also suggest that the social status i.e. popular versus unpopular, rather than the number of nominations, was related to higher levels of quality of life. Thus, the social position in a class is also relevant to the children’s quality of life.

In this study only children who didn’t get any popularity nominations from their classmates reported lower quality of life. One possible explanation might be that being accepted in general is perceived as more desirable than not being accepted by anyone. Thus, the number of nominations is not as important as being liked by at least one of your peers. During middle childhood, preferences in peer relationships start to shift toward being concerned with whether one is accepted by peers or not (Rubin et al., 2013). The need to belong is considered to be one of the basic needs (Nesdale, Durkin, Maass, & Griffiths, 2004). A desire to fulfill this need represents the driving force for establishing various social interactions, including interactions with peers. Relationships with peers are thought to influence children’s vision and perception of themselves (Rubin et al., 2006). By continuing with this logic it is possible to assume that low versus high social status among classmates would affect the way a child thinks and feels about himself/herself. Findings from previous studies support such a conclusion (e.g. Rubin et al., 2013).
Other possible factors that might play a role here is that the school is compulsory for everyone, and children spend on average 5-6 hours per day at school. In other words, children have to spend a great amount of time at school. Thus, social interactions between classmates are an every-day life experience. Therefore, if this environment is unfortunate in terms of social contacts, it might have a significant impact on one’s perception of the overall quality of life. In fact, disliked children have been found to evaluate their social experiences as less positive and often view themselves as less competent in social interactions as compared to the more liked classmates (e.g Rubin et al., 2013). Unpopular children are more likely to face unpleasant experiences with their peers as being bullied and victimized, which is associated with higher internalizing and externalizing problems (Cillessen, 2011; Rubin et al., 2013). Hence, decreasing the children`s quality of life (e.g. Ladd, 2009; Rubin et al., 2013).

Another key issue worth considering is the measure instrument of popularity itself. In the current study, popularity measures as a continuum beginning with positive nominations (Perren & Alsaker, 2006). Negative peer nominations are not included, and usually are not used in Norway because of ethical reasons (we do not ask children to point out classmates that they dislike, therefore in a Norwegian setting a lack of peer nominations indicates children that are disliked). Hence, the method used in the current study differs from that of the classic sociometric popularity method (Coie, Dodge, Coppotelli, & Scarr, 1982). One could argue that excluding negative nominations made it difficult to compare findings from this study with those that examine sociometric popularity and its outcomes. The number of nominations was limited up to five, but the children nominated no more than four classmates. This kind of limitation in children’s answers is rather beneficial as it strengthens the validity of such reports (Cillessen, 2011). Moreover, the unlimited number of nominations is preferred to be used in large groups, while a limited number of nominations is considered to fit better in smaller groups (Cillessen, 2011).

However, it is worth to mention that since the current study is based on a normal sample, even children with no nominations from their peers on average evaluated their quality of life as “good”. These findings seem to go in line with findings from the previous study based on the normal population of Norwegian children (Jozefiak et al., 2009). Findings from their study indicate that children on average report satisfactory to high levels of their quality of life reported by children age from 8 to 16 years old.
One possibility in the explanation of such a high level of the quality of life is that the children could have established successful peer relationships outside of their classrooms, or school. Therefore one limitation of our finding is that we did not have measures of peer relations outside the child’s classroom, such as friends in a neighborhood, or children’s involvements in leisure time activities (hobbies and sport engagement). Thus, there is a possibility that they have successful relations elsewhere. In fact, in a Norwegian study conducted by Ogden (1995), was found that 95 % of children in 4th grade had between 2 to 5 friends outside of the school. However, others have found a much greater overlap in children’s network of friends at school and outside of the school (Kvello, 2006). Participants in that study were children from 4th, 7th and 9th grades. On average 50% of friends that children had at school were also reported as preferable to spend their leisure time with.

To sum up, results from the current study seem to be consistent with previous studies that showed a positive association between popularity and the quality of life (e.g. Holder & Coleman, 2009; Ostberg, 2003). Overall, few studies have however examined the link between quality of life specifically and popularity in the age group studied here (11-12-year-olds). The current finding suggests that popularity is as important for children’s self-reported quality of life in middle childhood as it have been reported for adolescents and young adulthood (Demir & Urberg, 2004; Kasser & Ahuva, 2002).

4.2 Reciprocal friendship and quality of life.

Similarly to popularity, a moderately weak positive associations were found for reciprocal friendship and quality of life. Such associations indicate that the increased number of reciprocal friend nominations results in higher scores of self-reported quality of life. Similar findings have been reported by a number of recent studies (Ben-Arie et al., 2014; Casas et al., 2007; Children’s society, 2012; Holder & Coleman, 2009; Goswami, 2012). For example, findings from the Holder and Coleman study (2009) show that children with many friends reported a higher level of happiness as compared to those with few friends. In that study, the author’s questionnaire had just one question on whether a child had many friends or not, without specifying about the number of friends or if those relationships were reciprocal or not (very often friendships are considered reciprocal by default). The current study examines more closely the friendship nominations and their relations to children’s quality of life.
Indeed, results from the current study suggest that the number of reciprocal nominations have an impact on the children’s quality of life. Those children who didn’t have any reciprocal friends in their class reported the lowest level of quality of life as compared to their classmates with reciprocal friends. Interestingly, children with no friends didn’t differ from those with one reciprocal friend. This particular finding contradicts with what has been reported in previous studies, as having at least one reciprocal friend is considered to promote children’s adjustment and quality of life (Bowker et al, 2011; Bukowski et al., 1998, Parker & Asher, 1993). In the current study, an interesting trend emerged. Level of quality of life didn’t differ between groups of children close to each other in number of nominations, except four reciprocal nominations (Appendix IV). One question is whether this could reflect a desire to achieve a certain level in social interactions among one’s peers? The current finding suggests that more reciprocal nominations appear as more desirable than only having one. This particular finding contradicts to what has been commonly found in previous studies, where having at least one reciprocal friend has been found to be a protective factor for maladjustment (e.g. Hodges et al., 1999; Parker & Asher, 1993). Perhaps in a normative sample, with a relatively high rate of quality of life, multiple reciprocal friendships become more important to feel good about oneself, and thus, the more reciprocal nominations a child gets, the higher is reported level of quality of life. On the other hand, there is further a possibility that this finding reflects other individual or group characteristics. For example, Ostberg (2003) suggests that unpopular children may indicate that there exists a greater pressure for conformity, a higher degree of social control and a lower tolerance in a group.

An interesting pattern, however, was that those children who got four out of four possible reciprocal nominations also were those who reported the highest level of quality of life. This level of quality of life was significantly different from any other number of reciprocal nominations. For example, in a study by Uusitalo-Malmivaara and Lehto (2013) findings suggests that children who were least happy considered having more friends as a crucial factor for increasing levels of happiness. Friends therefore may become a resourceful asset in terms of providing assistance and support and promoting the development of necessary social skills. They are also important for affect regulation and constructive conflict resolution (Rubin et al., 2013). Therefore, it is reasonable to assume, that with the increased number of reciprocal friends the chance that children’s needs for social interactions with peers are also met. Such fulfillment of one’s social needs and desires might positively influence the child’s level of quality of life.
Previous studies confirm that children perceive their first choice to nominate as a friend, as more positively valued as compared to second or third ones (e.g. Kiesner, Nicotra & Notari, 2005). Children’s first choice in friend nominations is considered to have a stronger impact on the children’s adjustment and well-being as compared to other friends (e.g. Urberg, 1992). Such conclusions somewhat contradict with findings from the current study as at least two reciprocal nominations and not one was found to reach the significance level as compared to those children with no reciprocal friends in the class. A possible explanation why two and not one reciprocal friend were important in contrast to no friend nomination is related that the amount of time spend with friends increases during late childhood and adolescence. Thus, having two friends versus having just one doubles the chances of spending leisure time together. However, researchers have pointed to the need for further research that examines friendship reciprocity and relative correlates, in order to gain a better understanding of its influence on adjustment throughout childhood and into adolescence (e.g. Holder & Coleman, 2009, Rubin et al., 2013)

However, we should also consider that growing up in a digital age it is necessary to take into consideration the importance of Internet technologies for both one’s quality of life as well as establishing social relationships online. Researchers emphasize the influential role of digital technologies, as they are viewed as common devices for every-day activities, both for children and adults (e.g. Ben-Arieh et al., 2014; Demir, 2015). Overall, it seems like Internet-based interactions show positive correlation with positive friendship experiences both online and offline (Asher et al., 2014; Ben-Arieh et al., 2014). In other words, Internet represents unlimited possibilities to maintain and develop social relationships. Thus, those who might experience challenges in establishing reciprocal friendships at school might benefit from online friendships, and therefore friendlessness at school would not affect the overall quality of life. However, we did not have such data in the current study, but it could be an interesting future perspective to gain a better understanding of friendship in children’s every-day lives.

Rubin et al. (2013) mention several key factors for relations between friendship and quality of life, such as, individual characteristics of the child, the characteristics of the friend, and the friendship’s stability and intimacy. They also suggest that friendship represents the safe environment where the children’s basic need for social interactions beside family is met. Other researchers emphasize the importance of friendship quality and its role in child quality of life (Demir, 2015) or feeling of closeness and satisfaction (Lyubomirsky et al., 2005).
However, in the current study these possible correlates have not been measured, but would be interesting to examine in further research.

4.3 Associations between demographic factors and quality of life

Findings from the current study seem to correspond with the findings from earlier research, and suggest that the father’s level of education was positively, but weakly associated with children’s quality of life.

The level of education might be a proxy for income, which in its turn is considered to contribute to the person’s quality of life. Children, whose fathers reported having bachelor degree or more, reported a higher level of quality of life as compared to those children whose fathers just completed high school education. Though, no statistically significant differences within the levels of university education have been found, which suggest amount of years spent by children’s fathers at university does not impact differently on the quality of life of their children (i.e. there were no difference for a bachelor or a master degree or above). Similar findings have been reported in terms of associations between income and happiness (Dolan et al., 2008; Frey & Stutzer, 2009). It has been shown that increases in income contribute to happiness, but beyond a certain level, it starts to diminish. In other words, a father completing a bachelor degree seems to be sufficient for the children’s quality of life.

Children’s age and gender didn’t show any associations with quality of life. It indicates that both girls and boys evaluate their quality of life equally. It is consistent with findings from previous studies that also report no gender differences in the levels of happiness (Holder & Coleman, 2009; Uusiato-Malmivaara & Lehto, 2013), however, they did not measure quality of life as it was done in the current study.

It has been expected that age wouldn’t be associated with the quality of live, since the majority of participants was 12 years old. Samples with more diverse age groups would be a good further step in follow-up analyses in HOPP.
4.4 Strengths, limitations and suggestions for future research

There are several strengths with this study that should be mentioned. It is based on a relatively large representative sample (number of valid participants after obtaining parent’s consent and counting for missing was 691 children). The data was collected from a normal population of children (and not a clinical subgroup), which suggests that findings are valid for generalization. Measure instruments like the Inventory of Life Quality in Children and Adolescents (ILC), sociometric and reciprocal nominations represent the well-known and internationally recognized set of methods. In other words, such methods make it easier to compare findings not only across Norway, but also with studies from other countries.

Another strength of the current study is that there are actual counts of the number of nominations for each child as well as the directionality of nominations is detected (i.e. reciprocity) as compared to other studies that had only one question about number of friends and just assume reciprocity of the friendship without verifying it (e.g. Holder & Coleman, 2009). Thus, the current study provides a unique perspective by not only examining associations between friendship and quality of life in young children, but specifically, investigating the role of friendship’s reciprocity for children’s quality of life.

The number of students in schools varied from school to school, but the number of students in a class was on average the same, indicating that children’s opportunities for maintaining peer relationships were equally distributed for all children. Missing, on the other hand, is considered to have a much greater impact on obtained results. The participation in this study was voluntarily, but in order for child to be considered as eligible for participations, a written consent from at least one of his or her parents was also required. This resulted in that not all students in the class were eligible to participate. Even more, due to various reasons not all participants showed up during the data collection. Such missing could lead that popularity and reciprocal friendship scoring wouldn’t reflect the actual social interactions within the class.

Another strength of the current study is that the data is based on children’s reports, which are believed to be the most adequate way to access personal experiences, thoughts and beliefs (e.g. Ben-Arieh et al., 2014). Even though debates about reliability and validity of children as
informants are still ongoing, the majority of researchers recommend children to be the key informant about their own feelings and relationships (Ben-Arieh et al., 2014). However, for studies where children are informants, a multi-informant design is often used and to be preferred (Ben-Arieh et al., 2014). Popularity, friendship and quality of life variables represent phenomena strongly related to personal experiences, thus children’s self-reports are therefore considered a major strength in the current study. Nevertheless, one should bear in mind that some of the key concepts could for some children be difficult to understand and to separate from each other (i.e. what is a friend, and best friend). To counterbalance such potential bias, there were trained research assistants present during the assessments that took place in the schools classrooms. Indeed, there were some of the children who asked the research assistants to clarify the meaning of some of these concepts.

It is important to notice that there exist other factors that have not been measured in the current study, but that have shown correlations with one’s relations with peers. Therefore, this study cannot address causation, and thus study findings should be interpreted with caution.

On the other hand, since findings show that popularity and reciprocal friendship explain respectively only about 3% and 6% of the variance in quality of life variable, it is reasonable to assume that there exist other variables, not measured in this study, contributing to the children’s quality of life. Findings from other studies suggest that such core factors for the quality of life may be family relationships and friendship quality (e.g. Goswami, 2012, Diener et al., 2008). Therefore, more research on children’s quality of life and its correlates is needed.

Another limitation is the study sample is cross-sectional, and therefore, the direction of the associations is not known. It also implies that the scores in the quality of life are more likely to reflect the short-term quality of life tied to the situation there and then. Thus the question whether the quality of life is stable over time remains to be answered by future research. Peer relationships are not static but under the constant development, therefore a longitudinal design is optimal. Over the next years, however, longitudinal information will be available.

To sum up, the current study contributes with examining associations between quality of life and peer relations, more specifically, popularity and reciprocal friendship each of which
uniquely predicted the quality of life. The research on children’s quality of life and its correlates is rather novel, therefore studies investigating ways of promoting children’s quality of life are much needed. School settings seem like a perfect place in implementing the interventions based on current and previous research.

4.5 Implications

Findings from this study suggest that the design and implementation of prevention and intervention programs aimed at fostering positive development and promoting high level of quality of life should consider peer relationships, and especially, friendship as a part of those programs. Both schools and parents may be active agents of such programs, by promoting positive aspects within peer relationships (like popularity and friendship) one would expect to increase quality of life as well. Parents may contribute by helping a child to expand the areas where it is possible to establish successful relationships, for example by signing in to a new sport section or reading club at school. Teachers may influence by organizing school activities in such a way that children with few or no friends would have bigger chances of establishing new ones.

Since the present study is based on sample of children from normal population, result may also describe general tendencies for normal population of children. Latter can be rather beneficial for clinical practice and research focusing on health-related quality of life. Knowing how children on average score their quality of life makes it comparable to reports from clinical subgroup of children.

Although research that is focused on peer relationships and quality of life seems to be important both from preventive and clinical perspectives, it is necessary to pay attention to what kind of unexpected consequences it may lead. Finding from this study describe general tendencies in groups of a certain population, therefore it cannot define each and every person from that population. It is important to remember in order to avoid possible stigmatization of participants. Self-reported questionnaires may put a child in situation when he or she needs to focus on unpleasant experiences, which can negatively impact child’s general condition and state of mood. The children that didn’t get a parental consent in order participate in the study may feel themselves excluded from the much larger group of those who could participate in the project. It is important to have in mind that such situations may potentially take place.
Therefore a reaction plan needed to be developed in order to successfully cope with these situations and their participants.
5 Conclusion

The current thesis examined the associations between quantitative features of popularity and reciprocal friendship (number of nominations) and quality of life reported by children. Both popularity and reciprocal friendship had a positive association with children’s quality of life. Findings suggest that the social status i.e. popular versus unpopular, rather than the number of nominations, was related to the children’s quality of life. The number of popularity nominations was not as important as being liked by one of peers. On the contrary, number of reciprocal friend nominations played a significant role in quality of life. Those children who didn’t have any reciprocal friends in their class reported the lowest level of quality of life as compared to their classmates with reciprocal friends. Even more, those children who received four out of four possible reciprocal nominations reported the highest level of quality of life.

However, it is worth to mention, that participants in this study were children from normal population and both children who are disliked by their peers and children with no reciprocal friends in the class evaluated on average their quality of life as "good". Results from this study also suggest that both popularity and reciprocal friendship were not strong predictors of quality of life, indicating that there exist other variables, not measured in this study, contributing to the children’s quality of life. Thus, identifying these fundamental factors, which influence children’s quality of life, could be beneficial for developing programs promoting high quality of life and hence preventing possible maladjustments in a long-term perspective. School settings seem to be a perfect place to implement such programs.
References


Appendices

Appendix I: Flowchart of sample selection

7 schools from Horten
1 school from Akershus
1 school from Bærum

957 students from 6th and 7th grades

155 students did not obtain parent consent for study participation

802 eligible students with informed consent

691 students included in the current study; response rate: 72.3%

111 students were absent during the collection of data

students from 2nd to 5th grades were excluded due to project design
Appendix II: The Inventory of Life Quality in Children and Adolescents (ILC, Norwegian variant)

1. **Skole**

På skolen har du jo mange fag. Du må lære mye i disse, skriving, regning osv. Hvor godt får du dette til? Hvordan klarer du det?

![Smiley faces indicating different levels of quality](image)

veldig bra (1)  ganske bra (2)  både og (3)  ganske dårlig (4)  veldig dårlig (5)

2. **Familie**

Hvor godt kommer du overens med moren din, faren din, og dine søsken og hvordan er de mot deg? Hvordan går det med deg i din familie?

![Smiley faces indicating different levels of quality](image)

veldig bra (1)  ganske bra (2)  både og (3)  ganske dårlig (4)  velig dårlig (5)

3. **Andre barn**

Når du gjør noe sammen med andre barn. Hvordan er de andre barna mot deg og hvor godt kommer du overens med andre barn?

![Smiley faces indicating different levels of quality](image)

veldig bra (1)  ganske bra (2)  både og (3)  ganske dårlig (4)  veldig dårlig (5)

4. **Alene**

Når du er for deg selv, for eksempel leker eller gjør noe annet, hvordan føler du deg da?

![Smiley faces indicating different levels of quality](image)

veldig bra (1)  ganske bra (2)  både og (3)  ganske dårlig (4)  velig dårlig (5)
5. **Helse**

Er du for tiden frisk og i god form eller føler du deg syk? Hvor godt er altså helsen din?

![Rating Scale](image1)

- veldig bra (1)
- ganske bra (2)
- både og (3)
- ganske dårlig (4)
- veldig dårlig (5)

6. **Humør**

Er du for det meste irritert, trist osv. eller er du for det meste i godt humør? Hvor bra er altså humøret ditt?

![Rating Scale](image2)

- veldig bra (1)
- ganske bra (2)
- både og (3)
- ganske dårlig (4)
- veldig dårlig (5)

7. **Alt sammen**

Hvis vi tenker på alle spørsmålene som ble still til deg; alt sett under ett, hvordan har du det?

![Rating Scale](image3)

- veldig bra (1)
- ganske bra (2)
- både og (3)
- ganske dårlig (4)
- veldig dårlig (5)
Appendix III: *Tests of normality: Quality of life variable*

Figure A1. *Histogram*

![Histogram of QoL variable](image1)

- Mean = 4.44
- Std. Dev. = .406
- N = 591

Figure A2. *Normal Q-Q plot*

![Normal Q-Q plot of QoL](image2)
Appendix IV: *One-way ANOVA post hoc tables*

Table A1. *One-Way ANOVA Comparison of Quality of Life and Children’s Popularity*

<table>
<thead>
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<th>Number of nominations</th>
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<td>-</td>
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<tr>
<td>6 and more</td>
<td>79</td>
<td>4.52</td>
<td>.39</td>
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*Note.* Bold type with * means p<.05.

Table A2. *One-Way ANOVA Comparison of Quality of Life and Children’s Reciprocal Friendship*

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<th>Number of reciprocal nominations</th>
<th>n</th>
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<th>SD</th>
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<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th></th>
<th>5</th>
<th>6 and more</th>
</tr>
</thead>
<tbody>
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<td>113</td>
<td>4.30</td>
<td>.48</td>
<td>-</td>
<td>.07</td>
<td>.17*</td>
<td>.19*</td>
<td>.37*</td>
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<td>.41</td>
<td>-</td>
<td>.10</td>
<td>.12*</td>
<td>.30*</td>
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<tr>
<td>2</td>
<td>181</td>
<td>4.47</td>
<td>.38</td>
<td>-</td>
<td>.02</td>
<td>.20*</td>
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<td>.18*</td>
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*Note.* Bold type with * means p<.05.
Table A3. *One-Way ANOVA Comparison of Quality of Life and Paternal Education*

<table>
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<th>Father’s education</th>
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<th>SD</th>
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<th>2</th>
<th>3</th>
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<td>.16*</td>
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<td>.37</td>
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<td>.00</td>
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<tr>
<td>3. University degree (4 years and more)</td>
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<td>4.50</td>
<td>.38</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

*Note.* bold type with * means p<.05.