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Prevalence and Associations with Symptom Loads of Psychiatric Disorders and Quality of Life

Doctoral thesis

NTNU
Norwegian University of Science and Technology
Thesis for the Degree of
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NORSK SAMMENDRAG

Opplevd sosial støtte blant ungdommer i barneverninstitusjon: Prevalens og assosiasjoner til symptomer på psykiske lidelser og livskvalitet

Ungdom som bor i barneverninstitusjon har ofte vokst opp under utfordrende oppvekstforhold og har ofte erfaringer med omsorgssvikt, psykososiale belastninger, ustabile hjemmeforhold og flere relasjonsbrudd. Slike erfaringer kan forårsake en sårbarhet for videre negativ utvikling og kan ha store negative konsekvenser for senere relasjoner. Nye relasjonelle erfaringer i ungdomsalderen, som gir opplevelser av stabilitet, omsorg og støttende omgivelser, vil være avgjørende for videre positiv utvikling for disse ungdommene. En viktig faktor i denne prosessen vil være å oppleve sosial støtte.

Målet med denne studien var å kartlegge opplevd sosial støtte blant ungdommer i norske barneverninstitusjoner, i tillegg til å undersøke den mulige modererende effekten av sosial støtte på livskvalitet for ungdommer med et høyt antall negative livshendelser. Dette ble undersøkt gjennom (1) kartlegging av opplevd sosial støtte ved antall støttepersoner, betydningen av spesifikke støttepersoner og fornøydhet med støtten de mottok, (2) assosiasjoner mellom opplevd sosial støtte og symptombelastning på fire psykiatriske diagnoser og (3) assosiasjoner mellom opplevd sosial støtte og livskvalitet. Studien ønsker å bidra til utvikling av best mulig praksis i norske barneverninstitusjoner, gjennom å avdekke mulige beskyttende faktorer for ungdommenes helse og utvikling når de er under offentlig omsorg.

Prosjektet er en del av den større studien «*Psykisk helse hos barn og unge i barneverninstitusjoner*», som undersøkte utvalgte bakgrunnsfaktorer, omsorgshistorikk, psykisk helse, behovet for helsehjelp og annen relevant informasjon blant 400 ungdommer i norske barneverninstitusjoner, hvorav 230 var jenter (gjennomsnittsalder 16.5 år) og 170 var gutter (gjennomsnittsalder 16.9 år). 78.5% av ungdommene var etnisk norske og 19.7% var første- eller andregenerasjons innvandrere. Alle norske barneverninstitusjoner som møtte inklusjonskriteriene ble forespurt om deltakelse. Data ble samlet i tidsrommet 2010-2014.

Funnene viser at ungdom i barneverninstitusjon opplever mindre sosial støtte sammenliknet med ungdom i den generelle befolkningen, men de er stort sett fornøyde med støtten de mottar. Venner (89.8%), mor (68.4%) og institusjonsansatte (64.5%) var de hyppigst nevnte støttepersonene. Det ble funnet assosiasjoner mellom lavere antall støttepersoner og høyere symptombelastning på emosjonelle lidelser for begge kjønn. En-til-en støtte var assosiert med lavere symptombelastning på emosjonelle lidelser for jenter (ved støtte fra institusjonsansatte, venner og far) og lavere symptombelastning på atferdsvansker for gutter (ved støtte fra institusjonsansatte). I tillegg viser funnene assosiasjoner mellom et høyere antall støttepersoner og bedre livskvalitet for gutter, og mellom en-til-en støtte fra venner og institusjonsansatte og bedre livskvalitet for jenter. Vi fant ikke støtte i hypotesen om at sosial støtte modererer effekten av negative livshendelser for ungdommenes livskvalitet.

Resultater fra denne studien indikerer at det bør etterstrebes å legge til rette for ivaretakelse av allerede etablerte sosiale nettverk, i tillegg til å bidra til opprettelse av nye, positive sosiale nettverk for ungdommer i barneverninstitusjon. Institusjonsansatte fremstår som avgjørende i dette arbeidet, og sosial støtte vil være viktig for ungdommenes psykiske helse og livskvalitet. Samtidig må viktigheten av å samarbeide med andre støttende tjenester for de ungdommene med en bakgrunn bestående av et høyt antall negative livshendelser poengteres og prioriteres.

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ABSTRACT

Perceived social support among adolescents in residential youth care: Prevalence and associations with symptom loads of psychiatric disorders and quality of life

Adolescents living in residential youth care (RYC) often have backgrounds with maltreatment, psychosocial strains, instability in care, and disrupted attachments. Adverse childhood experiences (ACEs) can put these adolescents at high risk of negative development later in life, especially in social relationships. However, a change in environment during adolescence can contribute to positive and healthy development, with new experiences of stability, care, and supportive caregivers. Perceiving social support can be a crucial factor in this regard.

The overall aims of this dissertation were to investigate perceived social support among adolescents in Norwegian RYC and to examine social support as a potential moderator between a high number of childhood adversities and subsequent quality of life. More specifically, these issues were investigated through (1) measures of perceived social support, based on the number of support persons listed and individual support providers, as well as social support satisfaction; (2) associations between perceived social support and symptom loads of four psychiatric disorders; and (3) associations between perceived social support and quality of life. The findings from this dissertation will contribute to the aim of best practices in Norwegian RYC, through the investigation of potentially protective factors fostering better mental health and quality of life for adolescents living under public care.

This project is part of the larger study "*Mental health of children and adolescents in child welfare institutions,*" which investigated the background characteristics and history, mental health, the need for, and use of, mental health services, and a variety of other relevant information from 400 adolescents living in Norwegian RYC, comprising 230 girls (mean age = 16.5 years) and 170 boys (mean age = 16.9 years). Of the participants, 78.5% were Norwegian, and 19.7% were 1st- or 2nd-generation immigrants. All RYC institutions in Norway that met the inclusion criteria were requested to participate. The data were collected from 2010 to 2014.

The findings from this dissertation revealed that adolescents in RYC perceived less social support compared with adolescents in the general population. However, they were mainly satisfied with the support they perceived. The most often mentioned support persons were friends (89.8%), mothers (68.4%), and institutional staff (64.5%). Associations between a lower number of support persons and symptoms of emotional disorders were found for both girls and boys. Perceived one-to-one social support was found to be associated with a lower symptom load of emotional disorders for girls (yielding support from institutional staff, friends, and father) and a lower symptom load of behavioral disorders for boys (yielding staff support). Associations were also found between a higher number of support persons and a higher quality of life for boys and between one-to-one social support from friends and institutional staff and a higher quality of life for girls. However, perceived social support did not moderate the negative effects of an increased number of childhood adversities on their quality of life in adolescence.

The results emphasize the important role of RYC staff in maintaining adolescents' social networks when living in RYC. The staff should contribute to the initiation of new, positive social relationships for these vulnerable adolescents while living in RYC and provide stability and care as caregivers. Social networks and supportive relationships are important for the mental health and the quality of life of adolescents in RYC, and institutional staff serve an important role for these purposes. Ensuring the use of other health services for adolescents with the highest numbers of childhood adversities is also crucial, as these adolescents are at high risk of negative development because they are often in need of specialized treatment or help.

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Friendship, by Carmen 5 years old

LIST OF PAPERS

Paper I: Singstad, M.T., Wallander, J.L., Lydersen, S., Wichstrøm, L., & Kayed, N.S. (2020). **Perceived social support among adolescents in Residential Youth Care.** *Child & Family Social Work*. 25(2), 384-393. https://doi.org/10.1111/cfs.12694

Paper II: Singstad, M.T., Wallander, J.L., Lydersen, S., & Kayed, N.S. (in press). **Perceived social support and symptom loads of psychiatric disorders among adolescents in residential youth care.** *Social Work Research*.

Paper III: Singstad, M.T., Wallander, J.L., Greger, H.K., Lydersen, S., & Kayed, N.S. (2021). **Perceived social support and quality of life among adolescents in residential youth care: a cross-sectional study.** *Health and Quality of Life Outcomes.* 19(1), 1-12. https://doi.org/10.1186/s12955-021-01676-1

ACRONYMS AND ABBREVIATIONS

ACEs	Adverse childhood experiences
ADHD	Attention Deficit Hyperactivity Disorder
CAPA	The Child and Adolescent Psychiatric Assessment
CBCL	The Child Behavior Check List
CD	Conduct disorder
CI	Confidence interval
CWS	Child welfare services
DSM-IV	The Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition
EWB	Emotional well-being
HRQoL	Health-Related Quality of Life
ICD	The International Classification of Mental and Behavioral Disorders
KINDL-R	The Kinder Lebensqualität Fragebogen, revised version
PAPA	The Preschool Age Psychiatric Assessment (parent version of the CAPA interview)
PWB	Physical well-being
QoL	Quality of Life
RYC	Residential youth care
SSQ	The Social Support Questionnaire
SSQ-N	Perceived number of different types of support persons
SSQ-R	Relative number of support persons
SSQ-S	Satisfaction with the perceived social support
YiN	The Young in Norway study

KEY CONCEPTS

Adverse childhood experiences

In this dissertation adverse childhood experiences (ACEs) describe negative experiences of a serious nature in early years, with a high risk of causing long-lasting negative consequences. ACEs include discontinuity in care, maltreatment, abuse, neglect, and/or household dysfunction that often lead to negative development in certain areas, such as the development of the self, social skills, participation in social relationships, and increased activation of stress responses. Growing up in such distressing environments also causes vulnerability to mental, as well as physical, health problems later in life and a low quality of life.

Behavioral disorders

Behavioral disorders refer to psychiatric disorders that mainly include symptoms of aggressive, oppositional, or delinquent behaviors. Behavioral disorders include the psychiatric disorders conduct disorder (CD) and attention deficit hyperactivity disorder (ADHD).

Child welfare services

Child welfare services comprise the executive and decision-making authority of services, initiatives, and safeguarding of vulnerable children and adolescents and their families. Child welfare services should ensure safe and caring growing-up conditions for all children and adolescents and are supposed to take action if the youths' home conditions are harmful to the child. These include both initiatives at home – for the primary caregivers and for the specific child/adolescent – and out-of-home care placements if necessary.

Emotional disorders

Emotional disorders refer to psychiatric disorders characterized by a depressed mood, sadness, withdrawal, increased irritability, loss of emotions, loss of energy, loneliness, or anxiety. Thus, emotional disorders include the psychiatric disorders anxiety and depression.

Household dysfunction

The concept of household dysfunction refers to when children are exposed to or affected by parental problems, such as parental mental health problems, alcohol or drug problems, or crime.

Perceived social support

Perceived social support is defined as the availability of people who make a person feel cared about, valued, and loved, and it measures an individual's inner security of having supportive persons available in times of need. Perceiving other people as supportive contributes to the individual's sense of acceptance and belonging.

Residential youth care

Children and adolescents are placed in residential youth care (RYC) when their home situation with their primary caregivers is not satisfactory to ensure their healthy development and when the severity of their situation is too challenging for foster home placements. Each institution is populated by a small number of youths, usually housing 3-5 residents at a time.

Symptom load

Symptom load refers to the number of individual symptoms of a certain psychiatric diagnosis. In the current dissertation, emotional symptoms refer to symptoms of anxiety or depression, while behavioral symptoms refer to symptoms of CD or ADHD.

Quality of life

The current dissertation uses the definition of health-related quality of life for this concept, referring to an individual's self-perceived health and *the physical, psychological, and social domains of health, seen as distinct areas that are influenced by a person's experiences, beliefs, expectations, and perceptions.*

1. INTRODUCTION

We are moulded and remoulded by those who have loved us; and though the love may pass, We are nevertheless their work, for good or ill.

FRANÇOIS MAURIAC
(Bowlby, 1982, p. 331)

1.1 Topic of the dissertation

The main focus of this dissertation is to investigate perceived social support in a high-risk adolescent population living in Norwegian residential youth care (RYC), and how such perceptions may be associated with mental health and quality of life (QoL).

1.2 Rationale of the dissertation

1.2.1 The child welfare system in Norway

Norway was the first European country to establish public child welfare services (CWS) in 1896, with the aim of protecting or taking care of vulnerable children. The legislation had a twofold purpose by ensuring appropriate care for the individual child and providing security for the community. The community interests were most prominent, as its greatest interest was to protect society against delinquent youths' behavior, whereby CWS provided an alternative to prison for delinquent youth. In the mid-1900s, the perspective changed to a more child-centered approach, and the law focused on child protection, child security, and "the best practice for the child." This individualized focus continued and resulted in the current legislation, which took effect in 1992. The current legislation focuses even more on ensuring children's rights and fulfilling their needs for healthy development, especially for the most vulnerable children. It is based on a holistic mindset, in which the totality of each child's situation is crucial, and children are viewed as products of a complex interplay between individual characteristics and their relations to their primary caregivers, their wider network, and the community where they live. Children's emotional and intellectual development is regarded as a result of their environment and their primary caregivers' values, beliefs, and behaviors (Hagen, 2001; Nygren, 1997).

In today's CWS, the rule of law is crucial, striving to ensure openness and clarity in the exercise of authority. There are regulations for time limits, effectivity, and quality, whose overarching aim is to decrease the number of coincident decisions caused by personal factors

of the specific case worker. Documentation through specific standards and models is therefore a priority in the Norwegian CWS (Barne- og familiedepartementet, 2016; Nygren, 1997).

When a child has shown negative development over time or is at high risk of unhealthy development due to individual adolescent or environmental characteristics, CWS is supposed to take action. Its mission is to investigate if the home conditions are appropriate for ensuring healthy development for the child, in which safety, stability, predictability, and care, as well as positive relations between the child and the primary caregivers are crucial. If the primary caregivers are unable to provide satisfactory caregiving in this regard, due to either parental or adolescent factors, specific measures can be implemented to improve the family situation (Barne- og familiedepartementet, 1992; Nygren, 1997). All measures should be founded on the idea of "the best practice for the child," with the aim of providing a caring environment with stability, continuity, and healthy relations (Lov om barneverntjenester (the Child Welfare Act), 1992). If these measures do not lead to an improvement in the home-conditions or the child-caregiver relationship, out-of-home placements are considered. Foster home placement is sought, preferably in the extended family or with other persons in the child's current network (Barne- ungdoms- og familiedirektoratet, 2021). However, some children and adolescents are found especially vulnerable to negative development, and due to their complex situation, institutional placement is regarded as the best opportunity to fulfill their needs. Norwegian RYC is developing toward more specialization, where some institutions primarily focus on caregiving and providing a secure base, while others concentrate more on adolescents' challenging behavior or substance use (Barne- ungdoms- og familiedirektoratet, 2021). The latest development in RYC is the establishment of treatment-based institutions for adolescents in need of both CWS and mental health intervention (Melby et al., 2020).

1.2.2 Residential youth care

According to the Norwegian Child Welfare Act (1992), a child can be placed in institutional care under these conditions:

- The child lacks parental care, caused by either parental sickness or death (§ 4–6).
- The child has a high risk of being significantly harmed by living at home (§ 4–6).
- The daily care, security, or relations have serious deficiencies and do not conform with the child's needs (§ 4–12).
- Primary caregivers are unable to care for a child with special needs (§ 4–12).
- The child is maltreated or exposed to serious abuse (§ 4–12).
- The child's health or development is highly likely to be damaged by the parents' unresponsiveness (§ 4–12).
- The child has shown serious behavioral difficulties through serious or repeated delinquency or persistent substance abuse (§ 4–24).
- The child is at risk of being a victim of human trafficking (§ 4–29).

The mandate of RYC institutions is to provide an alternative home for children and adolescents who cannot live at home for various reasons. Usually, each institution houses 3–5 residents at a time. The institutions' primary aim is to address each child's need for stability, responsiveness, and care, as well as to provide a foundation for healthy development later in life through a caring climate, substitute parenting, professional monitoring, and a healthy social climate (Backe-Hansen et al., 2011; Leipoldt et al., 2019). The most often reported reasons for placements in Norwegian RYC are family problems, parents' inability to provide care, parental substance use, or adolescent behavioral problems (Backe-Hansen et al., 2011). For the current adolescent sample, the most common reasons for their first out-of-home placement were problems between the adolescent and the parents, including constant arguing, disagreements, or violence (43.4%), and individual adolescent (30.6%) or parental (25.6%) characteristics, such as extensive problems with anger or violence, mental health problems, or issues related to substance use (Kayed et al., 2015).

1.3 Theoretical framework

Adolescents in RYC report a high prevalence of adverse childhood experiences (ACEs), such as maltreatment, abuse, neglect, or household dysfunction (Collin-Vézina et al., 2011; Greger

et al., 2015), and the reasons for placements in RYC state the severity of their previous negative life experiences and unhealthy home conditions. Exposure to stressful life experiences challenges individuals' capacities and increase the probability of negative development and outcomes (Berlin et al., 2020; Brown & Wright, 2001; Compas & Reeslund, 2009; Santrock, 2008). However, there are individual differences in the long-term consequences of growing up in high-risk environments. How each individual responds to adversity depends on several factors, such as individual vulnerability and competences, in addition to risk and protective factors within the individual and in one's environment (Lerner et al., 2009). Differential susceptibility is a relevant concept in this regard, as children with predisposed vulnerabilities also seem to have the most developmental flexibility, as they benefit the most from later positive and high-quality caregiving (Belsky et al., 2007). These structures affect how some individuals cope better with adversities and can ensure a positive adaption despite their troubled backgrounds (Hygen et al., 2015; Lerner et al., 2009), which is especially relevant for adolescents in RYC.

1.3.1 Adolescent development theories

The biopsychosocial model is relevant for understanding the complexity of adolescent development and how individual characteristics, previous life experiences, and current environmental factors contribute to such development. This model emphasizes individuals' health and development as a result of interconnections among biological, psychological, and social factors (Engel, 1978). Examples of biological factors are gender, stress reactivity, or genetic vulnerability. Psychological factors refer to behavior, personality, coping and social skills, or self-esteem and emotions. Examples of social factors include social support, peer relationships, or family background. In this regard, individual development is dependent on several factors, and few biological or environmental factors are formative by themselves (Gottlieb et al., 2007; Lamb & Bornstein, 2011). However, when individual vulnerability is present in some of the areas considered in the biopsychosocial model, such as compromised attachment structures or poor social relationships, other potentially health-promoting factors in the model should receive increased attention to ensure further positive development. In this regard, other developmental theorists have captured the complexity of adolescent development in their models.

Developmental theories are not complementary in all aspects, but they have several commonalities, and each theory provides important contributions to the current knowledge on

the complexity of adolescent development (Santrock, 2008). Some of the most prominent theorists are Freud, Erikson, and Piaget, who describe individual development through stage-oriented theories. These include children's vulnerability to early influences, especially from their primary caregivers, and age-related social, emotional, and cognitive development. All of these developmental stages result in youths' efforts to make meaning of their surroundings, in which adolescence appears crucial in identity development (Manning, 1988; Santrock, 2008; Shaffer, 2005). Other developmental theorists, such as Vygotsky, Skinner, Bandura, and Bronfenbrenner, describe adolescent development from a continuity point of view, paying more attention to environmental influences and social learning processes, where social interactions, responses from others, and observations are regarded as core influences on development. *Bronfenbrenner's ecological theory* refers to an understanding of the influences on individual behavior, as affected both individually by specific systems, such as close relationships, family structures, or community systems, and in the interactions between several systems. These contexts represent major contributions to the development of children, in dynamic development with already established predispositions, temperaments, and capacities of the individual child (Lerner et al., 2011; Santrock, 2008).

These different developmental theories lend contributions to an understanding of development as a life-long process, consistent with the biopsychosocial model, where development takes place in a dynamic interaction among personality factors, early experiences, and the individuals' social environments. In the development process, children are active participants and develop in a dyadic interplay with their social environments, as described by the transactional model (Sameroff & Mackenzie, 2003). As the family system is an important contributor to socialization and integration of values, it can cause high developmental impact (Shaffer, 2005). Consequently, adolescents with certain vulnerabilities, such as household dysfunction, lack of adequate care, maltreatment, and unsatisfactory social environments, are at high risk of negative development. Such vulnerabilities are highly present among adolescents who are removed from their homes, such as adolescents in RYC. However, these negative structures are changeable, and repetitive positive experiences can challenge individual expectations of the environment by providing positive and healthy relational experiences (Bowlby, 1982; Lamb & Bornstein, 2011). Placements in RYC can therefore be crucial for establishing healthy environments for vulnerable adolescents and should be of interest in a closer investigation.

1.4 Adolescents in residential youth care

For adolescents living in RYC, at high risk of negative development, health-promoting factors in their environment should be investigated, and initiatives should be ensured. As suggested by the biopsychosocial model, social factors such as social relationships and social support are important for adolescent health and development and are associated with several positive outcomes. Being part of a social network generates feelings of belonging and interpersonal value, which can have beneficial effects on several developmental processes (Baumeister & Leary, 1995; Cohen et al., 2000). Additionally, close relationships or social support can function as resilience factors and are of particular importance for optimal function and development of individuals with previous exposure to child maltreatment (Edwards et al., 2014). With the current organization of RYC institutions, the primary aim for the RYC staff is to reduce social and mental health problems among adolescents by providing a home-like, caring environment, ensuring healthy relational experiences, and offering social support in the absence of parental caregiving (Barne- ungdoms- og familiedirektoratet, 2010). The RYC staff can contribute significantly to positive development in this regard. The critical importance of having genuine, caring, and trustworthy staff available has been confirmed by adolescents who are living in RYC institutions (Forandringsfabrikken, 2021). However, these associations need further investigation.

1.4.1 Attachment, early relationships, and caregiving conditions

The attachment theory highlights the important role of attachment and early relational experiences, and how these experiences contribute to development in later life, development of mental health problems, and the capacity for self-regulation and coping (Ainsworth et al., 2015; Bowlby, 1982; Cassidy & Shaver, 2016). This developmental perspective also contributes to an understanding of the potential challenges that a lack of positive relational experiences or, conversely, dysfunctional attachment structures in the early years of life can bring to later social relationships (Bowlby, 1982). As compromised attachment structures are common for individuals with a history of maltreatment, this is highly relevant for adolescents in RYC, who often have had such experiences (Cassidy & Shaver, 2016; Greger et al., 2015).

Caregivers' capacity and sensitivity to respond to their children's signals and needs are central to the attachment theory (Bowlby, 1982). Since the caregiver can be physically present but emotionally inaccessible or absent (Bowlby, 1973), it is crucial how the child's emotional needs are met, responded to, and regulated (Cassidy & Shaver, 2016). Consistency,

stability, warmth, responsiveness, and sensitive behaviors are valued characteristics in this regard and will affect the attachment structures within the child and contribute to later secure attachments (Bowlby, 1982; Cassidy & Shaver, 2016; Thompson et al., 2003). Secure attachments can predict better social competence and sympathetic behaviors (Bowlby, 1982), while poor parenting and a child's lack of confidence in caregivers' availability and responsiveness are associated with later insecure attachments and deficits in development (Bowlby, 1982; NICHD Early Child Care Research Network, 1997). Therefore, poor caregiving, experiences of maltreatment, and household dysfunction, causing disrupted attachments, may provide insecure or negative attachment structures for the child, with potentially long-lasting negative consequences for social competence and difficulties in establishing new relationships (Bowlby, 1982; Carlson et al., 2003; Cassidy & Shaver, 2016; Sroufe et al., 1999). Adolescents in RYC are therefore regarded a high-risk group of reduced social networks.

The ability of the brain to change and adapt dynamically according to both age-related and environmental factors makes children highly vulnerable to negative caregiving in their early years (Thompson et al., 2011; Toga et al., 2006). Exposure to stressful events and trauma, along with the lack of sensitive and consistent caregiving, can also negatively affect the maturation of the brain. This in turn can potentially lead to impaired socioemotional and psychosocial development, as well as poorer emotional regulation (Bowlby, 1982; Dozier & Rutter, 2016; Thompson et al., 2003; Watts-English et al., 2006). These effects can have long-lasting negative consequences for later social relationships and trust in others, among other developmental effects in adolescence (Berens et al., 2017).

1.4.2 Autonomy development in adolescence

Adolescence is the transitional developmental period between childhood and adulthood (Rodgers & Bard, 2006), with extensive biological, psychological, and social development (Blakemore, 2019; Christie & Viner, 2005). Adolescent development includes physical growth, wide-ranging hormonal changes, brain maturation, expanded logical reasoning, social development, and changes in relationships, in addition to increased independence and autonomy (Grumbach & Styne, 1998; Rodgers & Bard, 2006; Santrock, 2008; Steinberg, 1988; Susman & Dorn, 2009). Adolescence can also bring intense emotionality (Archibald et al., 2006; Buchanan et al., 1992) that can challenge the ability to cope and lead to increased stress (Lamb & Bornstein, 2011; Rosenblum & Lewis, 2006). Access to appropriate coping strategies, social resources, and consequent support to deal with these changes can be of

critical importance, especially for vulnerable groups (Granic et al., 2006; Petersen & Hamburg, 1986).

In adolescent years, cognitive abilities increase, and there is a change in brain function due to structural maturation, change, and reconstruction (Paus, 2009). Brain development provides higher awareness and makes adolescents more capable to effectively cope with stress and emotional fluctuations (Helsen et al., 2000; Santrock, 2008). Cognitive maturation and increased cognitive capacity also lead to an expanded perspective about others based on an individual's positive and negative characteristics, for example, how adolescents view their parents (McElhaney et al., 2009). Moreover, one of the key psychosocial developments in adolescence is increased individuation through gradual detachment from parents, where the adolescent advances toward greater autonomy and independence (McElhaney et al., 2009; Santrock, 2008).

Autonomy development includes increased responsibility, independence and self-reliance in making one's own decisions, including identity formation (Santrock, 2008; Shaffer, 2005). Although this period is marked by parental distance, the attachment system is still active in times of stress, and the need for parental support in adolescent autonomy development remains (Dozier & Rutter, 2016; McElhaney et al., 2009). Parents most often fill important roles as providers of security, stability, support, and structure (Granic et al., 2006; Laursen & Collins, 1994; Laursen et al., 1998; Steinberg, 1988). Therefore, for adolescents with predisposed vulnerabilities to negative development, the lack of social resources and supportive adults can provide further vulnerability. Perceiving support and acceptance, as well as the belief in their own capacities, can encourage adolescents' exploration of different opportunities and provide security and confidence in their own potential. Poor communication and limited tolerance from primary caregivers can potentially have the opposite effect (Côté, 2009). Having access to close and supportive adults, most commonly represented by parents as primary caregivers, providing commitment, sensitivity, and availability are therefore the best ways to support positive autonomy development during adolescence (Cassidy & Shaver, 2016; Dozier & Lindhiem, 2006).

For adolescents living in RYC, both insecure attachment structures and the high prevalence of ACEs, in addition to the lack of available and stable primary caregivers, serve as risk factors inhibiting their autonomy development. The presence of others who can fill these roles as supportive caregivers and contribute to establishing new, healthy attachment structures will be of significance for further development.

1.4.3 The development of self

Personality organization through identity development and the development of the self also occurs during adolescence (Champion, 1995), where interaction with others is the core developmental factor. Self-understanding is a cognitive construct that represents the individual's thoughts of oneself (Zimmer-Gembeck & Collins, 2006), based on other people's reactions and responses to one's actions, and may change according to the context (Thompson et al., 2011). Establishing one's place in relation to others in a variety of settings is therefore central to identity development, as feelings of belonging and self-definition are core elements (Coplan & Killen, 2011; Shaffer, 2005). This can also partly explain why interpersonal relationships increase in importance, complexity, and intensity during adolescence (Brooks-Gunn & Graber, 1994) and why high social competence is beneficial.

The constructs of self-esteem and self-concept are among the core dimensions of identity development and self-understanding (Zimmer-Gembeck & Collins, 2006). These constructs include individual beliefs in their own capacity to fulfill tasks and accomplish goals. Moreover, adolescents self-evaluation and self-insight will determine how satisfied they are with themselves (Coplan & Killen, 2011; Shaffer, 2005). The development of the self is therefore highly influenced by the developing cognitive capacities, sociocultural experiences, and social interactions occurring during adolescence (Rubin et al., 2013; Santrock, 2008) and plays an important role in fostering social behavior (Zimmer-Gembeck & Collins, 2006). Consequently, stable and caring relational structures and adults serving as healthy role models in terms of their behaviors and values, can be of critical importance for individuals' positive development of the self and overall sense of worth (Harter et al., 1998). Growing up exposed to ACEs and lacking stability and caregiver sensitivity can negatively affect the development of the self. Unwanted or neglected children might believe that they are unwanted or not worthy of anyone, thereby affecting their understanding of the self and self-value. Such negative development can be self-reinforcing as the development of the self fosters self-esteem, and low self-esteem is correlated to sensitivity to criticism and loneliness (Bowlby, 1973; Harter, 2012).

Simultaneous, emerging capacities for both emotional regulation and emotional expressions develop in adolescence, affecting the growth of an individual's personality and contributing to higher self-understanding and the development of one's uniqueness (McLean & Pratt, 2006; Santrock, 2008; Thompson et al., 2011; Zimmer-Gembeck & Collins, 2006). In this regard, adult caregivers support adolescents' emotional regulation (Helsen et al., 2000;

Santrock, 2008). Exposure to the subsequent lack of secure, stable, and supportive family structures place adolescents in RYC at risk of compromised emotional regulation. This risk, combined with the lack of coping resources and high stress activation, places on the RYC staff the responsibility to strengthen other potential healthy structures for these adolescents, such as the social and relational areas. Therefore, as proposed in the biopsychosocial model, ensuring healthy relational and social environments is crucial. For adolescents in RYC, this can be provided by stable, caring home conditions, consistent support, responsiveness, and encouragement, resulting in a positive influence on identity formation (Côté, 2009).

1.4.4 Social development and the need to belong

Social development and social relationships play a central role in adolescent years and contribute to several developmental processes. Increasing autonomy and individuation in adolescence contributes to further development of more diverse social relationships (McElhaney et al., 2009; Rodgers & Bard, 2006; Shaffer, 2005). Individual characteristics such as empathy, integrity, and self-reliance develop (Galambos & Costigan, 2003), and individual perspectives of oneself and of others expand. Individual development of social skills increase, often with positive effects on adolescents' social competence and initiation of social relationships (Coplan & Killen, 2011; Shaffer, 2005).

With increased autonomy and social competence in adolescence, the need to belong to and be accepted by a larger peer group increases (Rodgers & Bard, 2006; Santrock, 2008). Friends and peers become more important, and less time is spent with parents and other significant adults (Levpušček, 2006; Piko, 2001; Steinberg & Morris, 2001). Friendships are based on more mutual, voluntary relationships, with shared opinions, attitudes, and values (Rubin et al., 2013). Friends also become important providers of intimacy, closeness, and trustful relationships, especially among girls, which makes the establishment of friendships an important part of identity development (Brown & Larson, 2009; Smetana & Villalobos, 2009). Consequently, peers are also socialization agents in this period, influencing social behavior, activities, and attitudes (Collins, 1997; Coplan & Killen, 2011; Rubin et al., 2013). In this vein, peer relations can also increase vulnerability to the negative impacts of behavior and attitudes among adolescents who participate in unhealthy or high-risk peer constellations. Striving for the larger peer group's acceptance can therefore lead to unhealthy relationships, delinquent behavior, or substance use, as adolescents can adjust and imitate negative behavior, beliefs, and values to feel accepted (Santrock, 2008).

Individuals' social and relational experiences, as well as repeated patterns of actions and interactions early in life, affect later social dispositions, social skills, social competence, and self-representations (Bowlby, 1982; Harter, 2012; Lamb & Bornstein, 2011; Lum et al., 2018). In an adolescent friendship, trust and loyalty, commitment to the other person, and genuineness in the relationship are important characteristics. However, for adolescents with predisposed vulnerabilities in these areas, there can be a mismatch in the expectations of such a relationship. Known as asymmetrical reciprocity, this can cause challenges in upholding social relationships (Cáceres et al., 2021; Hall, 2011). Poor parental attachment and caregiving in early years can therefore contribute to poor adjustment and social adaption, which are risk factors leading to later participation in negative or maladaptive relationships and milieus (Brown & Larson, 2009; Tyler et al., 2006).

Early relational experiences also provide internal representations of the child's environment (Bowlby, 1982), known as inner working models, which develop from both positive and negative caregiving and relationships. These inner working models contribute to later development of social behavior, understanding, and competence, and play a major role in individuals' self-awareness and who they are in interaction with others later in life (Bowlby, 1973; Masten & Shaffer, 2006; Thompson, 2006). In this regard, ACEs and negative relational experiences can provide long-term patterns of vulnerability as individual expectations and understanding of relational processes when adapting to new situations will be affected by previous experiences (Darling-Churchill & Lippman, 2016; Thompson, 2006). Moreover, increased stress responses and cautiousness in establishing new relationships for fear of further rejection (Bowlby, 1973, 1982; Shonkoff et al., 2009; Toga et al., 2006) will be pronounced risk factors contributing to negative social development and a reduced social network size.

With the current knowledge of potential vulnerabilities and risk factors hindering adolescent development, environmental influences can adjust these individuals' stress-activation and coping skills in this period of life. Normally, the family system is an important contributor to socialization and integration of values during adolescence (Shaffer, 2005). Thus, accommodating and consistent caregiving by other significant support persons can be a crucial supplement for vulnerable adolescents who lack connection with their birth families. Such supplemental relationships can possibly prevent further unhealthy and negative developmental outcomes (Bowlby, 1982; Shonkoff et al., 2012). As it is assumed that adolescents in RYC represent a high-risk group in terms of social relationship deficits, and

new, stable relationships can work as health-promoting influences, a thorough investigation is needed of the role of social support for adolescents living in RYC.

1.4.5 Gender differences in relation to stress and support structures during adolescence

Girls and boys have certain predisposed characteristics that establish the differences between the sexes. During adolescence and especially puberty, gender-related differences become more prominent, as puberty represents physiological changes, with an impact on youths' psychological functioning (Fechner, 2003; Rapee et al., 2019; Stice, 2003). Gender responds to the sociocultural and the psychological expectations from the environment and can influence how the individual is supposed to think, act, and feel (Santrock, 2008). Some of the prominent gender differences include perceptions of stress and relationships with others. In terms of stress, girls report more negative events during adolescence, especially in terms of interpersonal and emotional stress, compared with boys (Rose & Rudolph, 2006; Wagner & Compas, 1990). Moreover, girls appear to have higher emotional intensity in their reactions and are more vulnerable to disruptions in relationships, as interpersonal conflicts or disagreements threaten close relationships (Bailen et al., 2019; Rudolph, 2002). Such heightened interpersonal stress and emotional responses among girls can partly explain their higher prevalence of anxiety and depression (Gore et al., 1993).

Girls' interpersonal relationships are also regarded as more central to their identity development than for boys (Maccoby, 1990). In social settings, girls are more sensitive and emotionally focused, with increasing intimacy and closeness in relationships during adolescence (Costa et al., 2020; Frey & Röthlisberger, 1996; Lanctôt et al., 2016). Girls express more emotions (Bailen et al., 2019; Diener et al., 1985) and appear to prefer intense dyadic relationships and rely more heavily on their best friends than boys do (Furman & Buhrmester, 1985; Rose & Rudolph, 2006). In contrast, boys prefer more extensive relationships with several friends and develop group structures with hierarchies and power structures rather than dyads (De Goede et al., 2009; Rose & Rudolph, 2006). Additionally, girls' sensitive and emotional expressions are in contrast to boys' more active behaviors in pursuing relationships, focusing on doing things together (Maccoby, 1990; Oberle et al., 2010; Youniss & Smollar, 1987). In an RYC setting, these sex differences should be considered as they may lead to the need for separate interventions for girls and boys.

1.4.6 Summary

In sum, poor caregiving, compromised attachment structures, the lack of stability in social environments, and the lack of healthy relational experiences put adolescents in RYC at risk of negative social and emotional development (Berens et al., 2017; Cassidy & Shaver, 2016; Thompson et al., 2003; Watts-English et al., 2006). Because several of the core developmental areas in adolescence, such as identity development, autonomy, and the development of the self, are related to social factors (Cassidy & Shaver, 2016; Granic et al., 2006; Petersen & Hamburg, 1986), the social environments for adolescents in RYC can contribute crucially to healthy development (Belsky et al., 2007). As adolescents in RYC often have vulnerabilities due to their relatively reduced social development and social networks, concerns must be raised about their overall development and well-being. To address these concerns and inform helpful initiatives, an in-depth investigation of the actual provision of and facilitation of perceived social support should be important (Rhodes & Lowe, 2009; Rutter, 2006).

1.5 Social support

1.5.1 Definition

Sarason and colleagues define social support as *the existence or availability of people on whom we can rely, people who let us know that they care about, value, and love us* (Sarason et al., 1983). Thus, the concept of social support refers to certain relational processes between individuals and the function of social relationships. It includes having access to support from others in times of need, which can promote well-being and positive development (Cohen et al., 2000; Sarason, Sarason, et al., 1990). It is well documented that newborns depend on others' social stimuli in their immediate search for attachment to and social connection with their primary caregivers (Ainsworth et al., 2015; Sroufe, 1979). Being confident that there is a trusted person to turn to who will come to their aid in times of need will provide the best foundation for individuals' positive development (Bowlby, 1973). Early experiences of close relationships lay the developmental foundation for the quality of later relationships and influence the individuals' sense of social support through perceptions of the availability of others and their interpretation of supportive behaviors (Sarason, Pierce, et al., 1990).

Being integrated in social networks and ensuring social relationships have positive individual consequences and can fulfill the needs for acceptance, belonging, self-worth, and

feelings of being valued by others (Baumeister & Leary, 1995; Santrock, 2008; Sarason & Sarason, 1985). These feelings of interpersonal value that develop from perceived social support are related to an individual's self-perception, self-image, and self-esteem (Sarason, Pierce, et al., 1990). Interpersonal relationships that provide safety and supportive behavior in a familial context and among peers also have considerable consequences for adolescent health. Perceiving social support is related to prosocial behavior, protection against risky behaviors and substance use, improved mental health, and reduced mortality risk (Holt-Lunstad et al., 2010; Viner et al., 2012; Wang et al., 2018). Additionally, social support promotes self-esteem and self-regulation (Lakey & Cohen, 2000) and buffers against negative effects of stressful situations or life events (Cohen & Wills, 1985). Through the availability of significant support providers, social support also have a direct stress-reducing function (Ditzen & Heinrichs, 2014). By reducing the negative effects of stress, social support can function as a resource for coping with stressors (Cohen & Wills, 1985; Ditzen & Heinrichs, 2014). Thus, social relationships are highly important for children's and adolescents' socialization, especially for those with troubled backgrounds. As an individual's social world emerges from the foundation in early, close relationships (Ditzen & Heinrichs, 2014; Hartup, 1989), establishing healthy structures for further development is crucial for vulnerable adolescents (Perry, 2006).

Social support can serve different functions, based on the varied definitions of the concept (Wills & Shinar, 2000), and can also be measured in several ways. Even though the positive effects of social support and social relationships seem incontrovertible (Cohen et al., 2000; Cohen, 2021; Wang et al., 2018), there is a need to clarify which aspects of social support are important for which populations. The most common aspects of social support are received and perceived social support. Received social support emphasizes recently provided support from different support providers, reported for a specified length of time. Received support is typically measured by its frequency (e.g., the number of supportive behaviors in the last week) (Wills & Shinar, 2000). Perceived social support measures the quality and the availability of the support, defined as the perceived availability of people who make an individual feel cared about, valued, and loved (Sarason et al., 1983). It measures an individual's belief that supportive persons are available in times of need and that they can actively help the individual deal better with stressful situations or transitions (Lakey & Cohen, 2000; Wills & Shinar, 2000). Perceived social support also refers to a sense of unconditional acceptance from others, regardless of the circumstances. When an individual

feels accepted, one perceives support as available, which can further strengthen individual coping skills (Sarason, Pierce, et al., 1990).

In the current study of adolescents in RYC, perceived social support is regarded as the most beneficial approach. Perceived social support is most influential in reducing psychological distress (Cohen, 1988), which is highly relevant for this population. Due to these adolescents' experiences of stressful transitions and life situations, as well as their vulnerabilities in establishing new relationships and trusting others (Hartup, 1989; Tyler et al., 2006), their subjective feelings and perceptions of available support can be crucial for their well-being. The fact that perceived social support can function as a buffer against stress is another argument for focusing on perceived social support when investigating this vulnerable group of adolescents (Cohen & Wills, 1985; Ditzen & Heinrichs, 2014; Wethington & Kessler, 1986).

1.5.2 Epidemiology

Adolescents with previous negative caregiving environments and unstable home conditions represent a particularly vulnerable group for perceiving low social support (Ford et al., 2011; Franz, 2004), often due to mistrust, insecurity, and caution toward new relationships (Bowlby, 1982; Brown & Wright, 2001; Tyler et al., 2006). Previous research has shown that children in Croatian RYC have a lower number of support persons available compared with the general population, although actual numbers were not reported in this study (Franz, 2004). In the best comparable samples available for this purpose, repeated attachment disruptions and several out-of-home placements for foster children have negative consequences for social network size and psychological distress. Moreover, children placed in foster- or group homes report that their caregivers care less about them compared with children in the general population (Perry, 2006). Lower levels of social anxiety and depression, in addition to higher QoL, are other factors that are suggested to be associated with a higher number of support persons for high-risk adolescents, specifically disadvantaged youths (Mendonça & Simões, 2019). Moreover, since adolescents in RYC live separated from their parents, the institutional staff members become support providers and should offer a professional form of parenting (Berridge et al., 2012; Schiff et al., 2005). In high-risk adolescent samples, girls report higher perceived social support compared with boys (Bender & Lösel, 1997; Hoffnung Assouline & Attar-Schwartz, 2020). Because girls have more emotional closeness in their supportive relationships than boys, it can be assumed that

vulnerable girls benefit the most from one-to-one support (Costa et al., 2020; Lanctôt et al., 2016).

1.6 Psychiatric disorders in adolescence

1.6.1 Definition

Adolescence as a complex developmental period can bring a high state of emotionality and stress, which can be detrimental to mental health (Blakemore, 2019; Christie & Viner, 2005; Rudolph, 2002). Individuals' mental health is closely linked to well-being and interacting biological, psychological, and social factors, as presented by the biopsychosocial model. Mental health is related to individual factors, such as cognitive and social skills, the ability to cope with stressors, realization of one's own abilities, in addition to adaptation to the community (Galderisi et al., 2015; World Health Organization, 2005). Adolescents with high exposure to a variety of childhood risk factors is a group with high vulnerability to mental health strain later in life (Greger et al., 2015; Mills et al., 2013). Moreover, stress and dysregulated stress response systems negatively affect well-being, social interactions, and mental health (Chrousos, 2009). Mental health problems can occur when a certain number of symptoms, such as depressed mood, or certain levels of distress are present (Reneflot et al., 2018).

When mental health problems reach a level of symptoms, intensity, and duration, specific diagnoses can be applied to describe different psychiatric disorders. Diagnoses can be made when a minimum number and quality of specified symptoms are present (Segal, 2010). Because the totality of risk factors and protective factors is crucial for the onset and continuity of psychiatric disorders, and adolescents living in RYC institutions have high rates of vulnerabilities and psychological strains, they are a particularly vulnerable population for developing mental health problems (Bronsard et al., 2011; Jozefiak et al., 2016; Kieling et al., 2011).

1.6.2 Epidemiology

The reported prevalence of psychiatric disorders among adolescents typically range from 10% to 20% (Kieling et al., 2011; Polanczyk et al., 2015); however, the prevalence rates are <10% for children and adolescents in Norway's general population (Reneflot et al., 2018). Adolescents with a high prevalence of ACEs are at higher risk of developing psychiatric

disorders compared with those from typically functional families (Greger et al., 2015; Mills et al., 2013). ACEs and discontinuity in care, such as multiple out-of-home placements, are associated with over-activation of children's stress systems and increased vulnerability to mental health problems (Clemens et al., 2020). Adolescents placed in out-of-home care report an alarmingly high prevalence of mental disorders compared with adolescents in the general population, with a range of 20-61% for the former group versus 10-20% for the latter group (Bronsard et al., 2016; Bronsard et al., 2011; Egelund & Lausten, 2009; González-García et al., 2017; Lehmann et al., 2013). In fact, a recent study on the same RYC population as in the current study reported a 76% prevalence of psychiatric disorders among the adolescents (Jozefiak et al., 2016). The most prevalent diagnoses are depressive disorders (37.0%), anxiety disorders (34.0%), and attention deficit hyperactivity disorder (ADHD) (32.3%) (Jozefiak et al., 2016). In multiple studies, girls in RYC have been found to have a higher prevalence of emotional disorders, such as anxiety and depression, while boys most often report a higher prevalence of behavioral disorders, such as conduct disorder (CD) and ADHD (Bronsard et al., 2011; Jozefiak et al., 2016; Lüdtke et al., 2018; Maneiro et al., 2019).

1.7 Quality of life in adolescence

1.7.1 Definition

Quality of life (QoL) provides information about individuals' well-being in certain life domains and is based on a subjective perception of their current situation. For adolescents, the suggested focus is on individual functioning and health, addressing *the physical, psychological, and social domains of health, seen as distinct areas that are influenced by a person's experiences, beliefs, expectations, and perceptions* (Testa & Simonson, 1996). QoL can therefore be regarded as an individual's self-perceived health and a psychological construct used for measuring several aspects of the individual's well-being. Well-being is measured by capturing the different aspects and settings of adolescents' everyday life, such as their relationships with family, friends, and peers at home, in school, and in the community, respectively (Ravens-Sieberer & Bullinger, 1998, 2000). When measuring subjective perceptions, previous experiences will affect the individuals' interpretation of their current life situation. Additionally, adolescent QoL is related to family life, especially parental affection and promotion of autonomy, making adolescents in RYC vulnerable to experiencing a low QoL (Jiménez-Iglesias et al., 2015).

1.7.2 Epidemiology

ACEs in childhood contribute to adolescent vulnerability to a low QoL, as previous research has found a dose–response relationship between the number of childhood adversities and a poor QoL (Greger et al., 2016). Adolescents living in RYC institutions have a high prevalence of ACEs, and most studies report a significantly lower QoL among these adolescents compared with those in foster care and in the general population (Bronsard et al., 2013; Damnjanovic et al., 2011; Hjern et al., 2018; Nelson et al., 2014; Van Damme-Ostapowicz et al., 2007). Both adolescent self-reports and proxy reports by the adolescent primary contacts in the institutions have been investigated in the same adolescent RYC population as in the current dissertation. The results reveal a poorer QoL for adolescents in RYC compared with those in the general population, scoring lower on four out of the five subscales, namely physical well-being (PWB), emotional well-being (EWB), self-esteem, and relationships with friends (Jozefiak & Kayed, 2015). Moreover, girls report lower QoL and well-being compared with boys (Damnjanovic et al., 2012; Hjern et al., 2018; Llosada-Gistau et al., 2019; Nelson et al., 2014). Younger age is also associated with poorer QoL outcomes (Nelson et al., 2014). Furthermore, negative associations have been found between adolescents' QoL scores and mental health (Bronsard et al., 2013; Ravens-Sieberer et al., 2008). Another study among adolescents in RYC found that those reporting a lower perception of social acceptance also reported a poorer QoL, suggesting that inclusion in social networks could lead to an increased QoL (Jozefiak et al., 2017). Having supportive relationships with significant others is also mentioned as a core factor for a higher QoL. Friends in particular, in addition to parents and institutional staff, are characterized as the most important contributors to increased well-being and QoL among vulnerable adolescents (Costa et al., 2020; Swerts et al., 2019).

1.8 Contributions of this dissertation

Adolescents in out-of-home care are at serious risk of negative development across several domains due to exposure to ACEs, previous lack of consistent care, and extended negative early relational experiences. As separating these adolescents from their home milieus is found necessary to avoid further negative development, knowledge of potentially positive factors for ensuring their healthy development is needed. Adolescents in RYC often have a high prevalence of psychiatric disorders and a low QoL, causing further risk of negative development. Social relationships and the need to belong and be accepted by others are

especially important in adolescence. Because these social processes can have beneficial effects on adolescents' health and development, knowledge of social support structures among this vulnerable population will be of significance. However, such research is generally lacking. Moreover, little is known about the potential beneficial effects of perceived social support on high-risk adolescents' mental health and QoL. Expanded knowledge of social support structures in this population can promote the development of specific initiatives to establish and uphold social networks for the adolescents, with the aim to improve health and a positive development.

This dissertation brings new knowledge of perceived social support among adolescents living in Norwegian RYC and provides direct implications for practice, with the aim of ensuring and strengthening the best care and safeguarding possible for these adolescents.

2. AIMS OF THE DISSERTATION

The overall aim of this dissertation was to extend the knowledge of perceived social support among a high-risk adolescent population living in RYC institutions and how social support may be linked to their mental health and QoL. The investigation examined the prevalence of perceived social support, including the number of different types of support persons, satisfaction with support, and perceived social support from specific support providers, compared with adolescents in the general population. Associations of perceived social support with specific areas of interest, namely mental health and QoL, were also investigated. Additionally, the potential moderating effect of perceived social support on maltreated adolescents' QoL was examined. These aims were addressed in the three papers of the dissertation, as follows:

Paper 1. The main objective was to investigate the prevalence of perceived social support among adolescents living in RYC institutions, through the number of support persons and satisfaction with the perceived support. The different social support providers on whom the adolescents relied in their social networks were also examined. The findings were compared with adolescents in the general population, using data from the Young in Norway (YiN) study (second round).

Paper 2. The primary aim was to investigate the associations between perceived social support—through the number of different types of support persons and the availability of each social support provider—and mental health. Mental health problems was measured by the symptom loads of four common diagnostic categories: anxiety, depression, CD, and ADHD.

Paper 3. The aim was to examine the associations between perceived social support—through the number of different types of support persons and the availability of each social support provider—and QoL. Perceived social support as a potential moderating mechanism in the association between the RYC adolescents' childhood adversities and QoL was also investigated.

An overview of the models used in the three research papers is visualized in Figure 1.

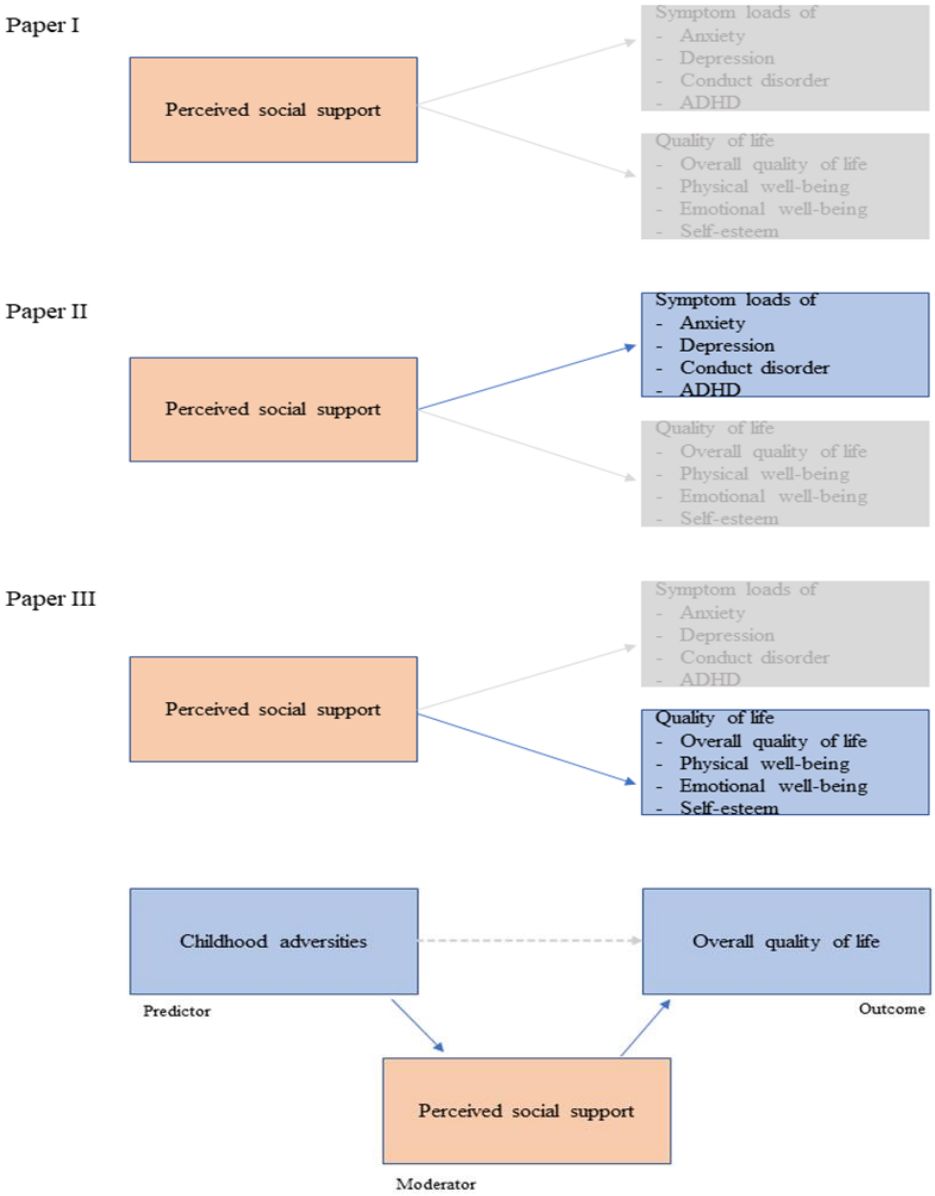


Figure 1. Overview of the models used in the three papers.

3. MATERIALS AND METHODS

3.1 Participants

3.1.1 RYC sample

After specific exclusion procedures were applied to all RYC institutions in Norway, 86 institutions remained, and the adolescents (n = 601) in each institution were individually invited to participate in the study. The recruitment followed approved procedures, including communicating thorough information about the project and the adolescents' rights, in addition to obtaining informed consent from all participants. For each participant under the age of 16, informed consent was obtained from a significant caregiver in addition to the adolescent's consent. Of the 601 adolescents, 201 declined to participate, resulting in a total sample of 400 (67% response rate). As anonymous Child Behavior Checklist (CBCL) scores were available for both participants and non-participants, an attrition analysis was performed, concluding that the participants' mental health scores were representative of those of the target population (Jozefiak et al., 2016). For the sample's main characteristics, please see Table 1 that is presented in Paper 3.

3.1.2 General population sample (Young in Norway) – used in Paper 1

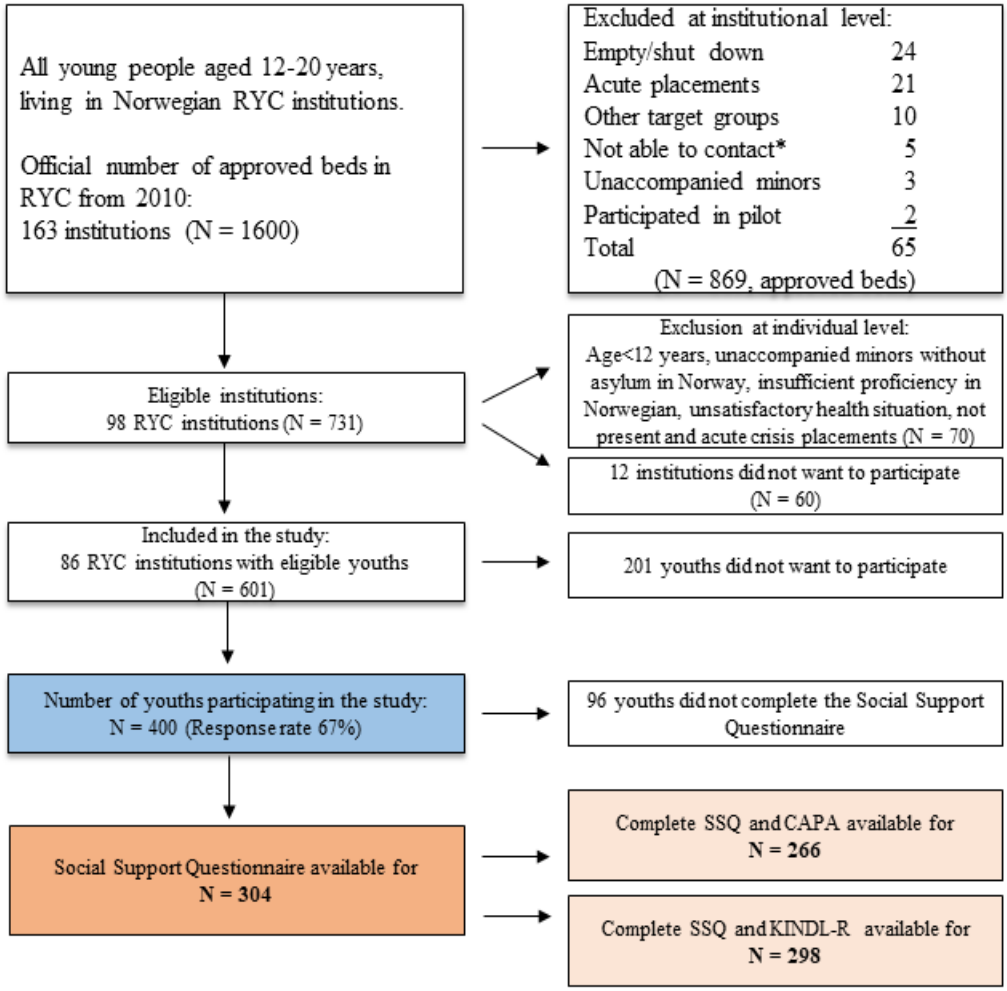
The general population sample was drawn from the second round of the YiN study, conducted in 1994. The participating schools were selected from a register of all Norwegian junior and senior high schools (students aged 12–19). Cluster sampling was applied, and the geographical region, school size, and school type stratified the sample (Wichstrøm, 1999). The second national round of the YiN had a response rate of 80% (N = 10,839) from the first round, of which 8,769 completed the Social Support Questionnaire (SSQ) used for comparison in Paper 1 (Wichstrøm, 2002). After excluding those who did not meet the age inclusion criterion and those with missing reports of age and sex, 7,095 remained. For more detailed information, please see Wichstrøm (1999).

3.2 Procedures

This dissertation was based on cross-sectional data from the project *Mental health of children and adolescents in child welfare institutions* in Norway (Kayed et al., 2015). Norwegian RYC institutions are under the responsibility of the Norwegian Directorate for Children, Youth,

and Family, and they serve 12–23-year-old children and adolescents placed in RYC institutions according to the Child Welfare Act (for those >18 years old, placements are voluntary). Placements are most often due to family problems, parents' lack of ability to provide care, parents' substance use, or adolescent behavioral problems (Backe-Hansen et al., 2011). For the adolescents in the current sample, the main reasons for their first placements were reported to be problems (such as constant arguing, disagreements, or violence) between the adolescents and the parents (43.4%), as well as extensive problems with anger, violence, mental health, or substance use, rooted in the individual adolescents (30.6%) or as parental characteristics (25.6%) (Kayed et al., 2015).

The inclusion of participants in this project are outlined in Figure 2. First, all 163 RYC institutions in Norway were randomly arranged in a database, and second, contacted by the project's research assistants. For those volunteering for participation, four trained research assistants, with comprehensive education and work experience in the field of vulnerable children and families, visited the institutions from 2011 to 2014. The research assistants collected the data from all relevant informants and provided assistance to the participants if needed during the data collection. To minimize the strain for the adolescents, the research assistants were always available, breaks were taken when needed, and the data could be collected over two days if necessary. As a token of gratitude to the participating adolescents, each was compensated with 500 NOK, and four randomly chosen adolescents won an iPhone.



*Note. *Not able to contact = if institutional staff did not respond to repeated invitations to participate over a period of several months. There were no significant differences between participating and non-participating institutions regarding geography and ownership. RYC = Residential Youth Care; SSQ = The Social Support Questionnaire; CAPA = The Child and Adolescent Psychiatric Assessment; KINDL-R = The Kinder Lebensqualität Fragebogen, revised version.*

Figure 2. Flow chart of participants from the Residential Youth Care sample (modified after Jozefiak et al., 2016).

Through the data collection, the main project aimed to investigate the adolescents background characteristics and previous life experiences, mental health and their need for and use of mental health services, QoL, perceived social support, school participation and function, in addition to the social climate at the institutions. All these domains were investigated by administering a selection of relevant questionnaires in approximately 4 hours. Psychiatric interviews were also conducted, each lasting approximately 30 minutes. Altogether, these data provided insights into the adolescents' histories of childhood experiences and their perceptions of their present life situations.

3.3 Setting

RYC institutions in Norway have the aim of providing a home-like environment for the adolescents in the absence of parental care. The institutions provide a milieu-therapeutic model and are not primary treatment facilities, as direct treatment is provided by other community agencies. The staff in the institutions should provide a caring environment and substitute parenting, serving as the adolescents' primary caregivers while living in the RYC institution. To ensure continuity, predictability, and structure in daily routines, all adolescents have one primary contact among the institutional staff. The primary contact has the overall responsibility for each adolescent, and should ensure that the totality of the initiatives surrounding the adolescent is sufficient to meet the adolescent's needs (Barne- ungdoms- og familiedirektoratet, 2010). This responsibility includes initiating school participation (almost 70% of the sample attended school) and leisure activities, making appointments for healthcare services if necessary, and participating in further planning with CWS and other relevant services concerning the adolescent. The staff members working in Norwegian RYC have a wide variety of educational backgrounds, as only 50% of the staff members are required to have higher relevant education. This can lead to a lack of formal education on adolescent development and child welfare among the staff. The institutions also have different shift schedules among the staff; some institutions have 3 staff shifts per day (daytime, evening, and night), while in others, the staff live in the institutions for 3–7 days before having a longer period off (Barne- ungdoms- og familiedirektoratet, 2017). More information about the RYC institutions is provided in Table 1.

Table 1. Institutional characteristics of Norwegian residential youth care

	%
Ownership	
Publicly/state owned	42.4
Municipally owned	3.9
Privately owned, commercial	29.1
Privately owned, non-profit	24.7
Location	
Urban area	23.8
Suburban area	21.6
Exurban area	29.4
Rural area	25.2
Institutions' primary aim	
Long-term placements	92.1
Short-term placements	25.8
Acute placements	10.4
Work shifts	
3 shifts per day	28.2
Co-rotation living with the youth for several days	58.1
Other	15.6
Regular visits from healthcare workers	
Yes	24.2
No	75.8

3.4 Measures

Descriptions of the instruments and measures used in this dissertation are presented in Table 2.

Table 2. Instruments and measures

Instrument	Measure/topic	Informants	Paper(s)
Questionnaire			
Child Behavior Checklist (CBCL)	Mental health problems	Primary contacts	2
Kinder Lebensqualität Fragebogen revised version (KINDL-R)	Health-related quality of life	Adolescents	3
Social Support Questionnaire (SSQ)	Perceived social support	Adolescents	1, 2, 3
Interview			
Additional interview	Background information/characteristics, household dysfunction	Adolescents	1, 2, 3
Child and Adolescent Psychiatric Assessment (CAPA)	Psychiatric symptoms (of anxiety, depression, and conduct disorder), childhood adversity	Adolescents	2, 3
Interview about the adolescent	Attention deficit hyperactivity disorder (ADHD)	Primary contacts	2

3.4.1 Measuring social support

Social support is a multidimensional concept, and a variety of definitions and instruments exists for measuring it, depending on the specific context and purpose. This variety in methodology can make comparisons between studies challenging. To facilitate measurement reliability, specific definitions must be used. As insecure and unstable relations, in addition to multiple relationship disruptions, can lead to vulnerability in initiating and maintaining social support networks, adolescents' perception of available support persons is the most relevant to measure. Perceived social support was therefore the chosen measure for the current population. Measuring perceived social support involves investigating who the adolescents feel they can turn to in times of need, which takes into consideration their individual

expectations and needs (Chu et al., 2010; Sarason et al., 1983). Moreover, as the objective presence of other people does not guarantee that support is actually provided and that the individual in need of support perceives the behavior as supportive (Rascle et al., 2005), this is yet another argument for the use of the SSQ.

In measuring perceived social support, a shortened 5-item SSQ was used, modeled on Sarason and Sarason's original full-length version that consisted of 27 items (Sarason et al., 1983). Adapted to adolescents (Wichstrøm & Hegna, 2003), it has an internal consistency of $\alpha = .76–.79$, depending on the score used. The SSQ has also been validated by other researchers and used to measure perceived social support among vulnerable and traumatized adolescents (Bal et al., 2003; Dumont & Provost, 1999; Magalhães & Calheiros, 2017).

Perceived social support is measured by the SSQ by addressing two complementary aspects of social support, in addition to the support by eight different types of support providers (Sarason et al., 1983). In this dissertation, the institutional staff was also included as an alternative support provider, using a total of nine different types of support providers. The questionnaire examines to whom the adolescents can turn to in times of need in five hypothetical situations, involving informational support, emotional support, and crisis intervention. For each hypothetical situation, nine possible support persons are listed (*mother, father, boyfriend/girlfriend, sibling(s), friend(s), relative(s), neighbor(s), institutional staff,* and *others*, in addition to the alternative *none*), who can be chosen as supportive persons. For each of the five hypothetical situations, satisfaction with the perceived support is measured on a 4-point scale, ranging from 1 (*very dissatisfied*) to 4 (*very satisfied*). Based on this information, three important aspects of perceived social support are measured: (1) the number of support persons listed (SSQ-N), (2) satisfaction with the perceived support (SSQ-S), and (3) from whom the adolescents perceive social support. The SSQ-N score is calculated by counting the number of support persons listed for the five items, giving a maximum score of 45. An overall SSQ-N score is calculated by dividing the SSQ-N score by the number of items ($n = 5$). As such, the overall SSQ-N score will reply to the mean number of support persons in each situation where the individual needs support and can thereby reflect the width of the respondent's social network. Overall SSQ-N will in the following be referred to as "different types of support persons." The SSQ-S score examines satisfaction with the perceived social support by providing a mean score of the satisfaction levels across the items, where a higher score indicates higher satisfaction (Sarason et al., 1983). Finally, the SSQ provides information on perceived social support from each of the nine different sources of

support and can be investigated separately by comparing it with that of the adolescents who do not perceive support from the same group of providers.

In Paper 1, it was concluded that adolescents living in RYC institutions are generally satisfied with their perceived social support, with little variation. Because SSQ-S measures satisfaction with support for each situation, not for each provider, this scale was not included in Papers 2 and 3.

3.4.2 Measuring symptom loads of psychiatric disorders

When measuring psychiatric disorders among children and adolescents, it is highly relevant to include information, not only on the presence of symptoms, but also on their onset and duration, to avoid false positives due to screening through self-reports (Shonkoff et al., 2009). As rating scales do not usually include information concerning the symptoms' onset, duration, and functional impairment, diagnoses based on either the Diagnostic and Statistical Manual of Mental Disorders (DSM) (American Psychiatric Association, 2000) or the International Classification of Mental and Behavioral Disorders (ICD) (World Health Organization, 1993) are preferred. To measure the prevalence rates of psychiatric disorders in the sample under study, the semi-structured interview Child and Adolescent Psychiatric Assessment (CAPA) was used, providing a wide-ranging investigation of psychiatric symptoms and diagnoses according to DSM-IV (Angold & Costello, 2000; Jozefiak et al., 2016). The CAPA has kappa values ranging from .74 to 1.0 (except for CD, with kappa = .55), and the test–retest reliability has been found adequate. Diagnoses were made by measuring prevalent symptoms over the past three months, as 90% of the respondents had lived in the current RYC institution in that period. The research assistants received expanded training in conducting and scoring the CAPA interviews. To ensure validity of the diagnoses, master coders participated regularly in the meetings. More than 10% of the audio–taped interviews were also recoded by blinded interviewers (N = 42) to avoid deviations in scores among the research assistants. Interrater reliability, measured by using Gwets kappa, was found appropriate, ranging from .74 to 1.0 (Jozefiak et al., 2016).

In this study, symptom loads of psychiatric disorders, rather than diagnoses, were used to investigate mental health problems. Therefore, by investigating symptom loads, associations could be investigated continuously instead of being based only on an established cutoff. In this regard, the findings could reveal significant associations between perceived social support and mental health not merely relying on fulfilling specific diagnostic criteria.

The totality of the symptoms among the most prevalent diagnostic categories in the sample was investigated, including anxiety (total symptom load of agoraphobia, generalized anxiety disorder, social phobia, specific phobia, and panic attacks) and depression (total symptom load of major depressive disorder and dysthymia). For the depression category, the research team wanted to avoid counting overlapping symptoms more than once by merging similar symptoms of major depressive disorder and dysthymia, so they were counted only once. The CD and the ADHD diagnoses were also included. Symptoms of ADHD were obtained through the parent version of the CAPA interview, The Preschool Age Psychiatric Assessment (PAPA), administered to the adolescent primary contacts in the institutions (Angold & Costello, 2000). For each diagnostic category, the maximum possible symptom loads were as follows: anxiety k = 10, depression k = 11, CD k = 15, and ADHD k = 19. For more details on the specific symptoms of each category, please see the Appendix 1.

3.4.3 Measuring quality of life

A variety of questionnaires can measure QoL. Among adolescents, a broad coverage of the QoL concept is preferred, and self-reports among children are preferable when they are old enough to give appropriate answers themselves. For these reasons, the inclusion of measures specifically related to family, friends, and school is suitable. In this sense, QoL is a psychological construct used for measuring several aspects of the individual's well-being, such as social and psychological, related to several subscales (Ravens-Sieberer & Bullinger, 1998, 2000; Wallander & Koot, 2016). To measure QoL, this study used the Norwegian translation of the Kinder Lebensqualität Fragebogen revised version (KINDL-R) (Ravens-Sieberer & Bullinger, 2000), a well-established instrument for measuring QoL among 8–16-year-old children and adolescents, which has been used in numerous studies. The questionnaire consists of 24 items, divided into six subscales: *PWB*, *EWB*, *self-esteem*, *family*, *friends*, and *school*. The responses reflect experiences in the past week, using a 5-point scale, ranging from 1 (never) to 5 (always). A sum score is calculated across all subscales, where a higher score indicates better QoL, with a maximum score of 100. KINDL-R has shown good scale fit, satisfactory internal consistency (Bullinger et al., 2008), and test–retest reliability (Jozefiak et al., 2008). Three of the subscales were excluded for use in Paper 3. The family subscale was irrelevant to the target group of this dissertation, as these adolescents had not resided with their families past the measured period. Because 29% of the adolescents in the study did not attend school, the school subscale was excluded to avoid a

parge portion of missing data. As the friend subscale conceptually partly overlapped with the SSQ (e.g., “I was a success with my friends” and “I got along well with my friends”), this subscale was also excluded.

3.4.4 Measuring childhood adversity

Information concerning childhood adversity was drawn from a combination of selected questions from the CAPA interview and a measure of household dysfunction, created based on information from one of the adolescent questionnaires. A childhood adversity scale was constructed, wherein the numbers of types of adversities were added, including the following adversities:

(1) *Witness of violence*
Seeing or hearing but not being a subject of an event with potential life-threatening or severe physical injury as an outcome, including that inflicted by others (through physical violence or rape) or from an accident.

(2) *Victim of physical violence*
Being the subject exposed to physical violence, as someone used force to cause serious injury or death, or for the purpose of intimidating or frightening the subject, or for its own sake through an assault, a fight, or torture.

(3) *Victim of family violence*
Being the subject of physical abuse by a family member.

(4) *Victim of sexual abuse*
Being involved in a sexual abuse episode, where another person involved the subject in activities for the persons’ own sexual gratification.

(5) *Household dysfunction*
Confirming that parents had a history of mental health problems, were often drunk, or used drugs, or the reason for out-of-home placement was parental crime, alcohol or drug abuse, or a psychiatric problem.

Confirmatory factor analysis showed a one-factor structure with a good model fit to the data when excluding the variable *victim of physical violence* (Greger et al., 2015). The childhood adversity scale thus measured the load of childhood adversities, with a range of 0–4.

3.5 Statistics

Statistical analyses were conducted using SPSS versions 22–26. P-values < .05 were regarded as statistically significant. However, due to multiple hypotheses and possible false-negative findings, single p-values ranging from .01 to .05 should be interpreted with caution. A 95% confidence interval (CI) is reported when relevant.

In Paper 1, perceived social support among adolescents in RYC was investigated, and the findings were compared with those among adolescents in the general population. As the questionnaires used in the two populations differed in the number of listed alternatives for potential social support providers, a customized calculation of the sum score had to be developed. Normally, an SSQ-N score is calculated as the sum score of the number of support persons listed for the five items in the SSQ. However, since adolescents in RYC had nine alternative support persons and the general population only had eight, a relative score (SSQ-R) was calculated to facilitate comparison between the samples. Therefore, each of the adolescent samples' number of support persons was divided by the number of alternatives (hence nine for the RYC sample, eight for the general population sample). Furthermore, student's *t* test was used for comparisons of perceived social support between the samples. Linear regression was used for three separate investigations. First, it was used to investigate the variance between the perceived social support reported by the RYC sample and the general population sample, with group, age, and sex as covariates. To ensure valid data, all two- and three-way interactions were included. Second, in the investigation of the satisfaction with perceived social support, linear regression was also used, with the same covariates as in the previous analyses. Third, linear regression was used to search for differences in the satisfaction with social support according to the number of different types of support persons, with the number of different types of support persons, group, and sex as covariates. For the investigation on the differences in the perceived social support of specific social support providers between the samples, the asymptotic Pearson chi-squared test was used.

In Paper 2, associations between perceived social support and symptom loads of psychiatric disorders were investigated. Due to the high number of missing responses on the CAPA, multiple imputations were used to substitute missing DSM-IV values by using adolescents' CBCL scores. In further analyses, symptom loads of each of the psychiatric categories were used individually as dependent variables, with the number of different types of support persons and age as covariates, using linear regression. As substantially different residual variances were found by sex, further analyses were performed separately for girls

and boys. When investigating associations between the symptom load categories and individual social support providers, independent samples t-test was used.

In Paper 3, associations between perceived social support and QoL were investigated. Linear regression was used, with overall QoL and all subscales as dependent variables and the number of different types of support persons as the covariate. The results were adjusted for age. When investigating mean-level differences in the QoL scales and associations with different support providers, independent samples t-test was used. Finally, a childhood adversity scale was included, which the researchers customized by removing overlapping variables, based on the results of a confirmatory factor analysis (Greger et al., 2015). By including the childhood adversity scale in the final linear regression, the possible moderating effect of perceived social support on maltreated adolescents' QoL was investigated. Overall QoL was set as the dependent variable, with perceived social support and the childhood adversity scale and their interactions as covariates. The results were adjusted for age. The results were visually inspected through Q-Q plots to check the normality of the residuals.

3.6 Ethical considerations

This project was approved by the Norwegian Regional Committee for Medical and Health Research Ethics (Project 2014/1516), in addition to the approval of the main project, also granted by the same committee (Project 2010/1965-6). In the recruitment of the adolescents, each institution's leaders were first contacted and informed (in both oral and written forms) about the project, so they could decide whether participation could lead to inexpedient strain to the adolescents under their responsibility. The institutional leaders were then assigned the responsibility of recruitment in their institution. The adolescents who were invited to participate received an information letter, which was approved by the Norwegian Regional Committee for Medical and Health Research Ethics, describing the project and providing information about voluntary participation, informed consent, and their opportunity to retract their already given consent. Their right to refuse answering all questions was also stated. When the research assistants met the adolescents, this information was orally repeated to them, and informed consent was always obtained from all participants (for those aged <16, informed consent was also obtained from the primary caregiver). To minimize the possible strain of participation, breaks were taken when needed during the interviews, and the data could be collected over two days if necessary. Moreover, a team of psychiatrists and

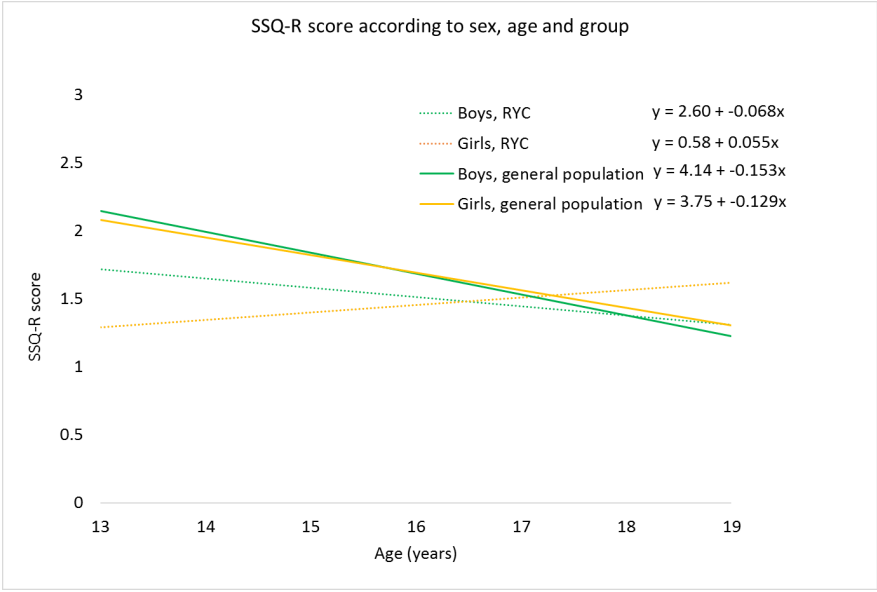
psychologists was always on call during the data collection in case their expertise was necessary.

4. RESULTS

An overview of the research papers is presented in Figure 1.

4.1 Paper 1: Perceived Social Support among Adolescents in Residential Youth Care

A lower number of support persons was found among adolescents living in RYC institutions compared with adolescents in the general population, indicating a smaller width in their social support network while living in RYC. However, sex and age differences were found, as presented in Figure 3. At a younger age, the number of social support persons significantly differed between the two populations, for both girls and boys, whereas at an older age (around 16–18), this difference decreased, and no significant differences were found. For boys in RYC, the number of social support persons decreased with older age, while for girls in RYC, the number of social support persons increased with older age.



Note. SSQ-R = relative number of support persons; RYC = residential youth care.

Figure 3
The relative number of support persons for girls and boys in the two samples.

Whereas adolescents in RYC were generally satisfied with the support they perceived, they were less satisfied than adolescents in the general population. Additionally, social support satisfaction was higher for those with a higher number of support persons in both populations, but there was more variation in the RYC sample. Age did not act as a confounder in this regard.

Significant differences were found between the samples related to specific support providers, as presented in Table 3. A significantly lower proportion of adolescents in RYC reported their parents and their siblings as support persons compared with adolescents in the general population. In addition, a higher proportion of the RYC population reported support from other relatives compared with the general population. The three most commonly mentioned social support providers for adolescents in RYC were friends, mothers, and the institutional staff.

Table 3. Reported support persons from the residential youth care sample and the general population sample

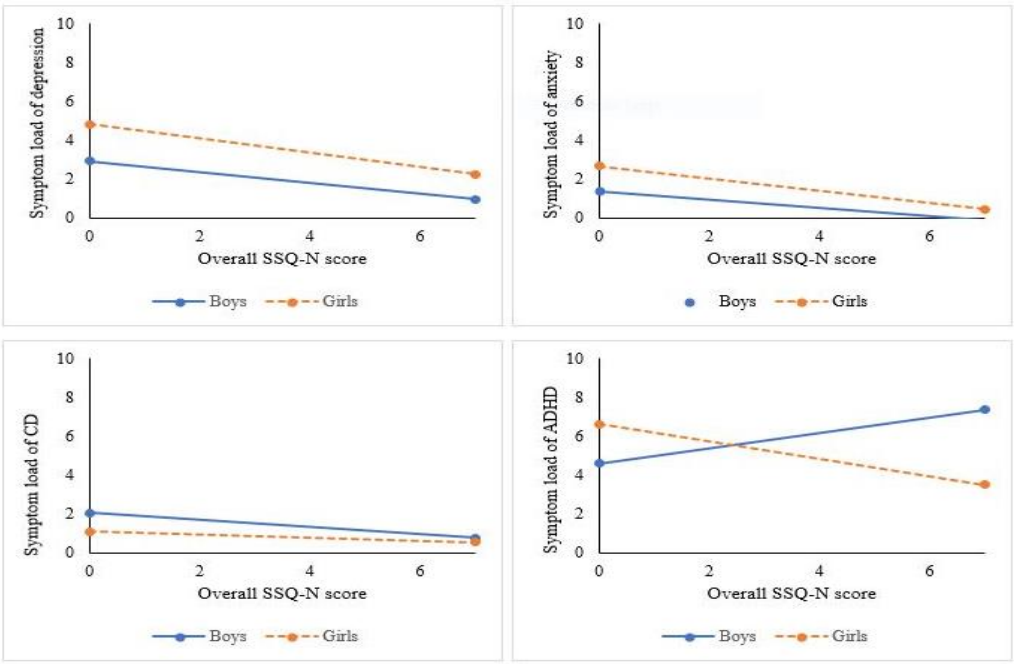
Support person(s)	RYC (N = 304)		General population (N = 7 095)		
	n	%	n	%	p*
None	45	14.8	1,115	15.7	.668
Mother	208	**68.4**	6,578	**92.7**	**<.001**
Father	144	**47.4**	6,050	**85.3**	**<.001**
Boyfriend/girlfriend	155	51.0	3,394	47.8	.282
Sibling(s)	159	**52.3**	4,340	**61.2**	**.002**
Friend(s)	273	89.8	6,260	88.2	.404
Relative(s)	137	**45.1**	2,614	**36.8**	**.004**
Neighbor(s)	22	**7.2**	1,022	**14.4**	**<.001**
Institutional staff	196	64.5	-	-	-
Others	82	27.0	2,095	29.5	.339

Note. Each support person is only counted once, regardless of being mentioned as a support person in more than one item. ***Bold numbers*** *indicate significant differences between the groups. The category "institutional staff" is only available for the residential youth care sample. RYC = residential youth care.*
**The asymptotic Pearson chi-squared test*

4.2 Paper 2: Perceived Social Support and Symptom Loads of Psychiatric Disorders among Adolescents in Residential Youth Care

The prevalence of psychiatric symptoms among adolescents in RYC differed between girls and boys, as girls had more symptoms of depression and anxiety, and boys had more symptoms of CD. No sex difference was found for ADHD symptoms.

A higher number of different types of support persons was associated with fewer symptoms of emotional problems, specifically depression and anxiety for girls and anxiety for boys, as presented in Figure 4. Additionally, girls reported fewer symptoms of emotional problems when perceiving social support from their friends (depression and anxiety), RYC staff (depression), and father (anxiety). Those with RYC staff support also reported fewer symptoms of ADHD. Boys who perceived social support from the RYC staff reported lower symptoms of CD than those without this support. Boys who perceived social support from their father also reported more ADHD symptoms than adolescents without their father's support.



Note. Overall SSQ-N score = the number of different types of support persons; CD = conduct disorder; ADHD = attention deficit hyperactivity disorder.

Figure 4
The symptom loads of each diagnostic category as a function of overall SSQ-N score.

4.3 Paper 3: Perceived Social Support and Quality of Life among Adolescents in Residential Youth Care: A Cross-Sectional Study

There were significant associations between a higher number of different types of support persons and better overall QoL for boys. This was also the case for two of the QoL subscales for boys, specifically for EWB and self-esteem, but for girls, the width of their social network was only associated with the self-esteem subscale. When examining the role of specific social support providers, associations were found only for girls. More specifically, having a friend's support was associated with better overall QoL, as well as higher scores in all QoL subscales, and having staff support was associated with higher self-esteem.

When examining the relation between childhood adversity and overall QoL, there were no moderating effects of having a higher number of different types of support persons or perceiving support from specific support providers.

5. DISCUSSION

This dissertation aimed to investigate perceived social support among adolescents living in Norwegian RYC. As relational capacities, being part of a wider social network, and perceiving social support make strong contributions to healthy development and improved handling of stressful life situations (Bowlby, 1973; Ditzen & Heinrichs, 2014; Lerner et al., 2009; Wills & Shinar, 2000); thus, there is reason to believe that improving social relationships and networks can be beneficial for high-risk groups that are vulnerable to negative development and compromised social networks. The current research supports these assumptions.

5.1 Main findings

The findings from this dissertation reveal that adolescents' living in RYC institutions perceive less social support, mainly through a more restricted social network containing fewer types of support persons, compared with adolescents in the general population. Younger age and female sex contribute to increased vulnerability in terms of perceiving social support from a low number of different types of support persons. The youngest girls in the RYC sample report the lowest number of supportive people compared with boys as well as with older girls. However, although a higher number of different types of support persons is associated with higher satisfaction with social support, adolescents in RYC are generally satisfied with the support they perceive. The most frequently mentioned social support providers in the RYC sample are, in order, friends, mothers, institutional staff, and fathers.

In relation to mental health, associations between the number of different types of support persons and symptom loads of emotional disorders are found for RYC adolescents. Those reporting the highest number of different types of support persons also report the lowest symptom load of emotional disorders. Moreover, perceiving social support from friends, institutional staff, and fathers is associated with lower symptom loads of emotional disorders for girls, while for boys, perceiving social support from institutional staff is associated with a lower symptom load of CD.

A higher number of different types of support persons is also associated with higher QoL among RYC adolescents. More specifically, these associations are found for several domains for boys, but only in the self-esteem domain for girls. Perceiving social support from friends or institutional staff is associated with better QoL for girls. No evidence is found that

perceived social support is a moderator in the relationships between the number of childhood adversities and QoL.

5.2 Perceived social support among high-risk adolescents in RYC

As expected, adolescents in RYC perceive lower social support compared with adolescents in the general population. These adolescents often have vulnerable backgrounds with ACEs, a lack of available or consistent parental care, and often, several disrupted attachments and placements (Collin-Vézina et al., 2011; Greger et al., 2015; Kayed et al., 2015). These are all risk factors contributing to poor development in several areas (Shonkoff et al., 2012; Toga et al., 2006), especially social and socio-emotional development (Booth et al., 1998; Thompson, 2006). Such troubled backgrounds serve as risk factors contributing to lower social skills and caution in initiating relationships, as well as difficulties maintaining social relationships (Bowlby, 1982; Lum et al., 2018; Repetti et al., 2002; Tyler et al., 2006). Therefore, it is not surprising that adolescents in RYC perceive social support from a lower number of support persons compared with adolescents in the general population.

Secure attachments to primary caregivers in early relationships, through feelings of being worthy of love and security in their emotional availability, provide the basis for the development of social competence and establishing and maintaining subsequent relationships (Bowlby, 1982; Cassidy & Shaver, 2016). In this regard, high social competence can contribute to larger social networks, as confirmed by the present results showing a larger social network among the general population sample. Additionally, early relational experiences in children's social environments lay the foundation for inner working models and provide important contributions to social expectations at an older age (Bowlby, 1982; Thompson, 2006). For adolescents in RYC, these expectations might differ from those of adolescents growing up in typically functional families, due to their divergent experiences of having caring adults available in times of need. Such a fundamental insecurity in relationships with others can lead to caution in initiating new relationships and challenges in upholding healthy relationships (Bowlby, 1982; Cassidy & Shaver, 2016; Darwish et al., 2001; Tyler et al., 2006).

Furthermore, there is an increased risk that the needs for acceptance and belonging during adolescence lead to unhealthy relationships with peers when healthy relationships are missing (Rodgers & Bard, 2006; Santrock, 2008). Previous dysfunctional relationships will also contribute to adolescents' later expectations from social relationships. Due to a possible

mismatch in expectations based on previous experiences, this can cause conflicts with other individuals' preferences in social relationships (Bowlby, 1982). For example, disagreements in what to expect from peers in supportive relationships, such as a lack of symmetrical reciprocity, including trust, loyalty, genuineness, and commitment, can impede the maintenance of these relationships (Hall, 2011). Keeping distance from close relationships might function as a self-protective behavior in this regard and could contribute to smaller social networks.

This lack of healthy and stable relationships and restricted social networks can have a negative impact on vulnerable adolescents when living in RYC. Adolescence brings a wide range of developmental changes and challenges, such as striving for autonomy, development of the self, and self-dependence, which are all developmental processes that benefit from supportive social structures. The lack of such structures will therefore put adolescents in RYC at increased risk of further negative outcomes (Côté, 2009; Santrock, 2008; Thompson et al., 2011; Zimmer-Gembeck & Collins, 2006). Finding reduced social networks among RYC adolescents compared with their peers in the general population illuminates the vulnerability of adolescents in RYC and should lead to initiatives aiming to increase their social support networks.

As the youngest girls seem to be most vulnerable in perceiving low social support, this group should be especially targeted. Girls also show more passive ways of coping compared with boys (Hampel & Petermann, 2006; Piko, 2001), which can result in smaller social networks and less initiative to establish new relationships. The new environment that an RYC placement represents can cause increased vulnerability in this regard. It is likely that the younger the age, the more recent their placements are, which would support this argument. These factors might contribute to the youngest girls' unease and feeling unsafe in their new living situation. Girls' higher prevalence of emotional disorders compared with boys can also be a potential barrier to initiating and maintaining social relationships (Jozefiak et al., 2016).

Even though adolescents in RYC perceive lower social support than adolescents in the general population, they are on average satisfied with the support, albeit to a lesser absolute degree compared with the general population. Most of the adolescents in RYC have experienced a lack of caring relationships and less available and responsive adults in their past, which can contribute to lower expectations for later relationships than is the case for those growing up in typically functional families (Bowlby, 1973; Coplan & Killen, 2011). Therefore, their satisfaction will be affected by previous experiences, as adolescents' inner

working models provide the basis for what is expected (Bowlby, 1982; Lamb & Bornstein, 2011; McElhaney et al., 2009). In this case, adolescents with negative relational experiences can have lower expectations for social relationships and therefore appear satisfied with having a lower number of different types of support persons available while living in RYC.

Adolescents in RYC most often report friends, institutional staff, and parents as support persons. They also mention other relatives as support persons more often than adolescents from the general population, while mentioning their mothers and fathers less. Friends stand out by far as the most often identified sources of social support for both populations. As adolescence is a period with increased autonomy and self-reliance (Shaffer, 2005; Steinberg & Lerner, 2009), coupled with detachment from parents and other significant adults (McElhaney et al., 2009; Zimmer-Gembeck & Collins, 2006), the presence and availability of friends' support become especially important (Levpušček, 2006; Piko, 2001; Steinberg & Morris, 2001). It is therefore encouraging that the number of adolescents in RYC who perceive social support from friends does not differ from that of adolescents in the general population. However, it is important to note that adolescents often look to peer groups with values, thoughts, and behaviors similar to theirs (Repetti et al., 2002), and negative behavior can also easily be copied from peers (Melby et al., 2020; Sameroff & Mackenzie, 2003). Therefore, social relationships with friends should be interpreted with caution for adolescents with troubled backgrounds. The positive effects of the relationships need to surpass the potential negative or unhealthy effects, such as participation in delinquent or high-risk milieus.

Even though the importance of friends' support is clear in adolescence, primary caregivers or other adults will still provide vital support to rely on in times of need (Harter et al., 1998; McElhaney et al., 2009), as implied by the present study's findings. This support is especially significant when situations with increased stress or decision-making demands occur (Cassidy & Shaver, 2016). Access to adults with the capacity to support adolescent choices and development, by promoting confidence in their abilities and decisions, seems crucial. For the population under study, RYC staff can be important contributors in this regard. It is therefore encouraging that a large proportion of adolescents in RYC reports institutional staff as social support providers, as previous experiences with poor relationships with primary caregivers and the lack of consistent caregiving are pronounced risk factors contributing to subsequent distrust in social relationships with adults (Bowlby, 1973; Carlson et al., 2003; Greger et al., 2015). As a change in residency is regarded as necessary to

promote positive development of these adolescents (Lamb & Bornstein, 2011; Thompson et al., 2003), institutional staff members' role as supportive, caring adults is crucial.

Survivors of child maltreatment often report severe damage to their sense of safety and trust in later interpersonal relationships (Davis et al., 2001), as well as poor emotional regulation strategies and social competence (Sroufe, 2005). Thus, it is uplifting that institutional staff can apparently represent a secure base and provide safety and stability for the adolescents, especially since their attachment systems are still activated and in need of support from adults in times of stress (Dozier & Rutter, 2016). Therefore, institutional staff members' knowledge of factors affecting relationships and their actual relational competence are of great importance. Moreover, they need to be able to understand how the adolescents' individual actions, behaviors, and beliefs can be affected of their individual backgrounds. In this case, institutional staff competence through professional training and education should be essential. Building safe relationships should be a primary aim of RYC placements, including stability in care and avoidance of further repeated separations from safe environments (Bowlby, 1973; Cassidy & Shaver, 2016).

5.3 Perceived social support and associations with symptom loads of psychiatric disorders

Adolescents in RYC represent a population vulnerable to mental disorders (Bronsard et al., 2011; González-García et al., 2017; Jozefiak et al., 2016), and investigating factors that can have a positive impact on their mental health is important. In this regard, perceived social support is a relevant factor. Our findings reveal that perceived social support is mainly associated with fewer emotional symptoms among girls and fewer behavioral symptoms among boys. Moreover, having a higher number of different types of support persons is associated with lower symptom loads of emotional disorders among both adolescent girls and boys when living in RYC.

In adolescence, social interactions play important roles in several areas, including the development of the self (Rubin et al., 2013; Santrock, 2008). Therefore, feelings of inclusion and acceptance, and perceiving social support from several support providers in a variety of settings significantly contribute to self-acceptance (Champion, 1995; Coplan & Killen, 2011; Lanctôt et al., 2016). In addition, girls are especially vulnerable to emotional stress and emotional activation and responses related to impacts from their immediate environments (Bailen et al., 2019; Rose & Rudolph, 2006; Rudolph, 2002). Thus, social support can lead to

reduced emotional symptoms among girls. However, for boys, this association is related only to symptoms of anxiety. Generally, boys' relationships are more active-seeking, preferring doing things together through group activities (Maccoby, 1990; Oberle et al., 2010; Youniss & Smollar, 1987). Therefore, this association can be a natural consequence of boys having several support persons to rely on or doing activities together, which can contribute to less prominent symptoms of anxiety.

Perceiving social support from friends, institutional staff, and fathers is associated with lower emotional symptoms for girls, while for boys, perceiving social support only from institutional staff is associated with lower symptoms of CD. The finding that perceived social support is primarily associated with emotional symptoms for girls can be partly explained by the fact that girls have higher prevalence of emotional than behavioral disorders (Jozefiak et al., 2016). This highlights the potential importance of perceiving social support for girls' mental health when living in RYC institutions. Adolescence is often associated with insecurity and reduced feelings of self-value as this period consists of identity-seeking, development of the self, and self-reliance (Champion, 1995; Coplan & Killen, 2011; Zimmer-Gembeck & Collins, 2006). Such massive changes can lead to insecurity, exacerbated by moving from one environment to another, often without any say in the matter. Having someone to rely on might therefore be crucial. Because girls tend to value close relationships, support from friends and RYC staff in this period can promote a sense of acceptance and feelings of self-worth (Furman & Buhrmester, 1985; Harter et al., 1998; Lanctôt et al., 2016). For boys, perceiving social support from institutional staff is associated with reduced symptoms of CD, which can be explained by a combination of the change in adult caregiver support and the rules and expectations that are present when living in RYC. Growing up in an environment with neglect and maltreatment, as well as the lack of consistent caregiving, can lead to insecurity and unpredictability (Bowlby, 1982; Dozier & Rutter, 2016). Therefore, experiences with predictable and consistent adults who provide a caring, loving environment can decrease these boys' behavioral symptoms. Their social development can improve with repeated and consistent positive experiences of caregiving by the RYC staff (Champion, 1995). Additionally, adolescents in RYC claim that when institutional staff meet them with care and sensitivity and try to understand the complexity of their traumas, their externalizing behavior decreases (Forandringsfabrikken, 2021).

In summary, these findings show the importance of institutional staff to adolescents' mental health for several reasons. In addition to serving as important social support providers, the institutional staff members perform an important function as primary caregivers for the

adolescents. As they are living with them in everyday life, they are in a unique position of revealing those adolescents at highest risk for a reduced social network and with the most pronounced need for increased support. To fulfill this role, the staff should have high competence, knowledge, and sensitivity about how psychiatric symptoms appear among the adolescents. Their knowledge about previous life experiences and impacts on subsequent developmental difficulties appears crucial, especially their awareness of potential psychiatric symptoms based on previous life experiences.

5.4 Perceived social support and associations with quality of life

Because adolescents in RYC report poor QoL (Bronsard et al., 2013; Jozefiak & Kayed, 2015; Nelson et al., 2014), investigating factors that can positively contribute to adolescents' daily well-being should be of high priority. As social relationships and feelings of social acceptance can positively influence vulnerable adolescents' QoL (Costa et al., 2020; Jozefiak et al., 2017; Swerts et al., 2019), this association should be investigated in-depth among adolescents in RYC. Our findings reveal that one-to-one support and close relationships with friends and institutional staff are the most important relationships for adolescent girls' QoL. Moreover, for boys but not for girls, a wider social support network with different social support providers is associated with better QoL. The finding that a higher number of different types of support persons is associated with several QoL domains for boys are as expected because boys tend to benefit mostly from having a wider social network available (De Goede et al., 2009; Rose & Rudolph, 2006). As QoL measures subjective feelings of happiness, self-esteem, and well-being, and boys are found to appreciate shared activities more than girls do, on average (Oberle et al., 2010; Youniss & Smollar, 1987), gaining acceptance and feeling valued by a variety of support persons in several contexts should help boys in particular.

For girls, higher self-esteem is reported by those with a higher number of different types of support persons. Being valued, accepted, and loved by several persons can build self-esteem, as the feelings of inclusion, acceptance, and self-worth are experienced repeatedly in several areas (Birndorf et al., 2005; Sarason et al., 1983). Interpersonal relationships are also closely related to identity development for girls, especially the development of the self (Maccoby, 1990; Rubin et al., 2013; Santrock, 2008), in which several contributors of support state their value across contexts.

One-to-one interactions are also associated with better QoL for girls, especially when perceived from friends and institutional staff. During adolescence, friends become

increasingly important, and reliance on adult caregivers generally decreases (Levpušček, 2006; McElhaney et al., 2009), as the need to belong and be accepted for who they are become core elements in this period (Baumeister & Leary, 1995; Rodgers & Bard, 2006). For adolescents, closeness in friendship and emotionality are important, which are often experienced in intense, dyadic friendships (Frey & Röthlisberger, 1996; Furman & Buhrmester, 1985; Lanctôt et al., 2016). Having friends who serve these functions is therefore unsurprisingly associated with higher QoL for girls in RYC and should be paid special attention. The QoL domain of self-esteem is also higher for those who perceive social support from institutional staff. Despite adolescents' decreased reliance on adults (Levpušček, 2006; Piko, 2001), primary caregivers still serve as central support persons ensuring security, stability, and structure. In addition they can support adolescents' increasing capacity to handle stressful or challenging situations (Granic et al., 2006; Laursen et al., 1998; McElhaney et al., 2009).

The main difference between friends' and caregivers' support is that mutuality and power between the participants differ, as the adolescent–caregiver relationship is not as balanced as friendships tend to be (Rubin et al., 2013). Therefore, caregivers serve as especially important contributors to adolescents' psychological autonomy and positive development of the self (Harter et al., 1998; McElhaney et al., 2009). In this regard, a safe and supportive home situation with consequent care is important for the development of self-evaluation and self-esteem, which in turn affect adolescents' identity formation (Coplan & Killen, 2011; Côté, 2009; Zimmer-Gembeck & Collins, 2006). Furthermore, as girls are especially vulnerable to stress and emotionality in adolescence (Bailen et al., 2019; Rose & Rudolph, 2006; Wagner & Compas, 1990), adults, such as institutional staff, can provide social support and contribute to their belief in themselves, in their own capacities, and ways of handling challenges in everyday situations. This present finding that institutional staff support is associated with girls' self-esteem is therefore relevant. As girls' identity development benefits from interpersonal relationships (Maccoby, 1990), it should be encouraging that institutional staff can serve as important contributors of positive outcomes through close relationships with these adolescents.

5.5 Potential moderating effect of perceived social support

As adolescents in RYC are exposed to ACEs, such as unpredictable and unstable home conditions, a lack of consistent care, unavailability of primary caregivers, and other stressful

experiences (Collin-Vézina et al., 2011; Greger et al., 2015), it is important to investigate potential moderating effects of such exposure. Since our findings indicate that adolescents perceiving social support report lower symptoms of psychiatric disorders and better QoL, it is reasonable to hypothesize that social support can moderate against such effects for the most vulnerable adolescents. However, the study does not find evidence that support the hypothesis that perceived social support moderates the effect of childhood adversities on adolescents' QoL.

The lack of moderating effects of social support on childhood adversities and QoL can have several causes. Methodological issues can provide one explanation. Because the SSQ provides information about the number of different types of support persons and perceiving support from specific support providers, this measure of support could be too general. Growing up with ACEs can negatively affect subsequent trust in others, social relationships, and feelings of safety. Due to the circumstances, adolescents with a high number of childhood adversities might not be receptive of the support provided by others and thus might need increased initiatives, closer follow-up, and an intensified and more structured approach to establishing close relationships with beneficial outcomes. A more in-depth investigation of social support structures and different approaches should therefore be relevant. The theory might also need adjustment to reveal potential moderators of maltreated adolescents' poor QoL.

Consequently, perceiving social support alone does not necessarily improve the most vulnerable adolescents' QoL. The function of social support should be investigated in more depth and with corresponding alternative initiatives, such as the staff's relational competence and approach in building relations, adolescents' attachment styles, and other institutional or adolescent background characteristics. Growing up under distressing conditions and with repeated negative early life experiences has long-term detrimental consequences for children's and adolescents' development and health, and the complexity of all factors interacting in this development requires complex approaches (Berlin et al., 2020; Brown & Wright, 2001; Cassidy & Shaver, 2016).

The lack of moderating effects of perceived social support also indicates the severity of growing up under highly vulnerable conditions, with reduced security, predictability, and caring environments. The importance of revealing damaging home conditions and thereby separating adolescents from unhealthy environments should be of the highest priority. Previous research has found that subsequent repeated, consistent, and genuine caregiving can reorganize adolescents' inner working models and expectations of others (Lamb & Bornstein,

2011; Rutter, 2006). It is therefore vital to prioritize giving these adolescents the best care possible, with competent, educated, and caring adults who provide stability and predictability. Their opportunity to initiate other initiatives beyond those provided in the RYC setting, such as health care or specialized treatment, is also crucial.

5.6 Strengths and limitations

The main strength of this dissertation is the nationwide, representative sample of participants from the adolescent RYC population. Moreover, the comprehensive data collection provides a major strength, consisting of well-established and validated measures for perceived social support, QoL, and in-depth investigations of mental health and psychiatric symptoms and diagnosis. In addition, extensive data of the adolescents' former and present life situations is available. A further strength is the high response rate among the participants.

The representativeness of the sample is another strength in the current data material. The availability of CBCL scores among the non-participants made the performance of an attrition analysis possible. Possible sampling bias could then be checked, to exclude that only the healthiest adolescents participated in the study. Even though the non-participants scored higher than the participants on some of the CBCL subscales, the Pearson's effect sizes were found to be small, thus validating the representativeness of the participating RYC sample (Jozefiak et al., 2016). The CBCL scores also made it possible to perform multiple imputations when there was missing data in the CAPA scores.

As the available research of perceived social support among adolescents living in RYC is quite sparse, the current research has contributed with new and expanded knowledge. However, there are several objectives, due to methodological or structural limitations, that are not addressed in the current research, and therefor provide some limitations to the results. First, using a cross-sectional design inhibits a discussion of causal inferences (Bryman, 2016). The current study examines relationships between variables, however, due to the methodological issues of causality, we cannot state causal influences of reasons for, or risk factors of, perceiving low social support. Neither can we state with clear confidence why some adolescents are more vulnerable of a more restricted social network than others. Second, we do not have access to information of the adolescents' previous mental health. Hence, we cannot state with certainty whether perceived social support has a reducing effect on psychiatric symptoms, or whether these associations are related to other explanations, for example individual vulnerability.

There are also limitations related to the SSQ that needs to be considered. The SSQ does not count the actual number of available support persons, and therefore does not measure the adolescents' network size. Rather the SSQ provide information of the width of the individual's social network through different types of support persons. Moreover, the actual presence of supportive persons in the adolescents' environments cannot be stated, as these results are based on adolescent self-reports. Thus, there could be people available to provide support in the adolescent's social network that is not counted, because the adolescent's individual perception is the only measure that is included. Results based on self-reports can in this regard provide bias in the reporting of results (Althubaiti, 2016). However, as previous ACEs contributes to later perceptions of social support, adolescent's self-report was the best suited measure for the purpose of this study. Another limitation of the SSQ is the social support satisfaction scale, as it does not provide information of the adolescent's satisfaction with individual support providers. Neither does it provide information of specific relational structures that provides a feeling of social support satisfaction. Moreover, we cannot state which supportive behavior is preferred by the adolescents, or how they profit from different supportive behaviors.

Unfortunately, we did not have the opportunity to include the adolescent's parents as respondents, which represents a limitation in the data. Such data could have complemented adolescents' retrospective reports, and lead to more in-depth information of the adolescent's previous home-situations through information of exposure to childhood adversities, early developmental factors, family functioning, and parents' health situation. Such information could have provided an opportunity for more in-depth investigations of associations between previous home conditions and present social support structures among the adolescents.

In Paper 1, a general population sample was used for comparison of perceived social support. When comparing results of such a phenomenon, the measure used is crucial for the interpretation of results. Thus, the only comparable data was drawn from the YiN-study (collected in 1994), with a 20-year difference from the current study (Wichstrøm, 1999). Hence, this difference in time might have caused secular effects. However, recent research from the Norwegian nationwide study "Ungdata" (N = 211 500), collecting information of adolescents' grow-up conditions, health-situation, stress, QoL and other relevant measures every third year, may indicate that our findings most likely presents a conservative result. Results from "Ungdata" show that most adolescents have satisfying relationships with their parents, about 90% of the adolescent's report having close friends, and most of them are satisfied with their teachers and the wider community in which they live (Bakken, 2016,

2020). In addition, the increased availability and use of smartphones and social media have influenced adolescent interactions, and have most likely increased the availability of support providers (Best et al., 2014).

The organization of CWS and the structure of RYC institutions differ between countries and can cause limitations due to the transferability of results (Berrick et al., 2017). Norwegian RYC has, as previously described in this dissertation, specific focus on a child-centered approach, and the institutions are preferred to be small and home-like, which differs from RYC in for example the US, where they often have a higher number of residents in each institution (Farmer et al., 2017). Thus, the uplifting findings from the current research, especially the central role that the institutional staff serve as support providers and facilitators of support, can be used as an argument for organizing RYC as more home-like institutions.

The methodological limitations taken into consideration; the current research does bring important knowledge to the field that should be considered in the development of new, interesting research questions. For specific implications for further research, please see section 7.2.

6. CONCLUSIONS

Every child deserves a champion-
an adult who will never give up on them,
who understands the power of connection,
and insists that they become the best
that they can possibly be.
Rita F. Pierson
(TED Talks Education, 2013)

Although research on the beneficial effects of perceiving social support and social relationships has increased over the last decade, the corresponding literature on adolescents in out-of-home care remains sparse. Additionally, the measurements used for investigating social support and social networks have varied, which hinders comparisons among studies and building a knowledge base. Therefore, in-depth knowledge of how social support may contribute to the health and well-being of adolescents in RYC is crucial, as they are already defined to be at high risk of negative development. Such knowledge is also highly relevant for providing beneficial care and supportive environments that can contribute to a healthy development for adolescents who have experiences from high-risk environments. Separating children and adolescents from their primary caregivers and home milieus is an extraordinary decision with the potential of several negative consequences, even though these placements' primary focus is on ensuring better stability, care, and predictability. As shown in this study, it is therefore uplifting that perceiving social support appear positively to contribute to these vulnerable adolescents' current life situation while in RYC, despite their often troubled and vulnerable backgrounds.

The results from the current dissertation substantiate the important role of perceiving social support in adolescents' mental health and QoL when living in RYC institutions and should therefore provide an important contribution for further development of practice in RYC. For girls, one-to-one close relationships are preferred, while for boys, having a wider network of different support persons in various contexts appears preferable. Friends and institutional staff stand out as the most important providers of support related to positive health outcomes for these adolescents. This new and expanded knowledge can inform how to ensure healthy relational structures for vulnerable adolescents in RYC, both within the institutions and in already established supportive networks outside the institutions.

When investigating this vulnerable group of adolescents, there is the possibility of further stigmatization when revealing the potential risk of negative developmental pathways. However, to develop and expand high-quality facilities and provide the best care possible for

these adolescents, such expanded research is highly needed. Therefore, the knowledge of perceived social support among adolescents in RYC will be beneficial for further development of their caregiving environments.

7. IMPLICATIONS FOR FUTURE RESEARCH AND PRACTICE

One of the staff saved my life.
She's like my extra-mom. She cares more
about me than anybody has ever done.
(Forandringsfabrikken, 2021, p. 66)

7.1 Contributions to theory about social support

Developmental theories highlight the importance of social relationships, social networks, and the need to belong during adolescence (Rodgers & Bard, 2006; Santrock, 2008). As social relationships generate feelings of belongingness and interpersonal value (Baumeister & Leary, 1995; Santrock, 2008), such relationships are closely linked to the development of the self (Harter et al., 1998; Zimmer-Gembeck & Collins, 2006). Thus, the biopsychosocial theory emphasizes the importance of social relationships for adolescent's health and development, especially for those with other risk factors, such as ACEs (Engel, 1978). Exposure to ACEs and stressful life events can lead to poor mental health and low QoL, which in turn can lead to challenges in coping with the mentioned developmental transitions during adolescence (Berlin et al., 2020; Brown & Wright, 2001; Greger et al., 2015, 2016). The current research finds that perceived social support is associated with lower symptom loads of psychiatric disorders and higher QoL. This provides support to the importance of social relationships in the biopsychosocial theory.

The current research also expands social support theory with knowledge of differences between the sexes. The results of the current dissertation show that there is a need for sex differentiated adjustments in interventions, especially for high-risk adolescents. As perceived social support is highly beneficial for vulnerable adolescent's mental health and QoL, their social relationships should be targets for intervention. Moreover, the current research suggests that girls and boys benefit from different social support structures, where boys benefit more from larger social networks and several different support persons, while girls benefit more from one-to-one support with significant individual support providers.

7.2 Implications for future research

There are several research questions that remains to fill the knowledge gap concerning perceived social support among adolescents in RYC, and that could be taken into

consideration when developing new research projects on perceived social support. As mentioned under limitations, the SSQ has some room for improvement. Future research should investigate the opportunity to develop the SSQ as a scale by expanding it to a wider investigation of perceived social support. A broader approach could include the opportunity to report the exact number of support persons and to measure satisfaction with each social support provider, not only situation specific as is the case in the current version of this instrument. The questionnaire could benefit from including other potential social support providers in the listed alternatives, such as grandparents and teachers. Participants should also have the opportunity to list unnamed sources of support themselves.

To enable a fuller contextual investigation of perceived social support among adolescents in RYC, future research should investigate how factors such as attachment structures, previous mental health problems, previous delinquent behavior, and their former social networks can be related to, and affect, present perceptions of social support. The adolescents' early relationships, previous social networks, and perceived social support could be investigated retrospectively if longitudinal data is not available. In this regard, adolescents' satisfaction with each of these relationships will be relevant as a measure of relationship quality. Such information will give the opportunity to measure and compare outcomes in both relationship quantity and quality. More in-depth investigations of social support structures would benefit from information about how adolescents perceive people as supportive; in which situations they feel supported, included, or accepted; whether certain initiatives or actions have specific importance for them in order to perceive someone as supportive; and what exactly makes them feel cared for or gives them a sense of belonging. Information on the adolescents' perceptions of social support will provide relevant knowledge of how RYC staff can facilitate healthy and high-quality social support structures for these vulnerable adolescents. Expanded research in this field can also facilitate comparisons between adolescents in RYC and adolescents from typically functional families, concerning their perceptions of supportive behavior. Such comparisons will provide in-depth knowledge of how previous caregiving conditions affect subsequent perceptions of social support.

Longitudinal studies should also be prioritized in further research with adolescents living in RYC institutions. Such research is especially relevant to the investigation of certain high-risk variables that can negatively affect adolescent health and development when living in RYC. Moreover, such research will also bring important knowledge of the effects of available supportive structures. Longitudinal studies will in this regard offer the opportunity

to investigate the effects of risk and protective factors. Research questions to be addressed in future efforts could include the development of social support providers over time, how the length of their institutional stay affects social relationships, whether initiatives concerning social skill training for adolescents in RYC improve their social development and social networks, how the adolescents define social networks and supportive behavior over time, and whether this definition will change with the availability of new, stable structures. Mental health strain before and during placement in the current RYC institution can also provide relevant information that can expand the knowledge of how a change in residence and the caregiving environment can affect mental health strain over time. It would also be interesting to investigate how social support structures may change and evolve over time during placement in RYC. Such an investigation can include if the specific persons they perceive as most supportive change and whether their definition of perceived social support change during their stay. It would be informative as well to examine if, and how, adolescents' social networks and who they perceive as supportive would change during their residential stay.

7.3 Implications for practice

The main contribution of this dissertation is the importance of perceiving social support from significant others for adolescents when living in RYC institutions. The findings then raise the question of how residential facilities can be optimized to ensure that adolescents in RYC perceive enough social support and that such support is of high quality and positively contributes to a healthy development for the adolescents.

First, institutional staff members are important social support providers for adolescents while they are living in RYC institutions, as they act as primary caregivers and mentors of the adolescents. Their important role as caregivers generates certain expectations of the organization of the institutions. Adequate numbers of staff members and work shifts that ensure stability and continuity are important to facilitate closeness and trust between the adolescents and the staff. Staff need adequate time to spend in one-to-one and group interaction with the adolescents they serve. It is crucial for the adolescents to find a trustworthy person to identify or feel safe with among the staff (Forandringsfabrikken, 2021), and this requires consistent availability by the staff. It is significant for the institutional staff to be aware of their important role, as providing a secure base and high-quality relations should be of the highest priority. To ensure high-quality relational competence among the staff, it is clearly advised that RYC institutions implement routines and institutional

structures that ensure continuous development and training in practice in this field. Regular staff meetings with updated theoretical training, practical exercises, and discussions with a foundation in specific situations in the institutions are suggestions for practical implementation. To identify adolescents with an increased risk of the negative consequences of perceiving low social support, it is recommended that RYC staff acquire knowledge of the symptoms of mental disorders and indications of low QoL. They also need to learn what aspects that positively contribute to adolescents' mental health and QoL. Ensuring basic knowledge of psychiatric diagnoses and symptoms and how such symptoms can have a negative impact on adolescents in daily life can positively contribute to how RYC staff meet adolescents' needs through increased initiatives, among others.

For adolescents with reduced social networks, maintaining already established supportive structures, and initiating new, healthy relationships when they move into care can be critical (Perry, 2006). RYC staff, especially primary contacts, have a responsibility in facilitating these networks. Friends play an important role in adolescence and are by far the most often reported sources of social support for adolescents in RYC. Therefore, healthy relationships with friends can be significant for these adolescents' well-being, as these relationships are found to be associated with better mental health and higher QoL. Maintaining and improving friends' support for adolescents in RYC can be promoted by staff through facilitating meetings between the adolescents and their friends, both within and outside the institutions. Additionally, they can contribute to adolescent social development with their close guidance and social skill training to improve the adolescents social competence (Lum et al., 2018; Oshri et al., 2017; Trentacosta & Fine, 2010). RYC staff should also facilitate adolescent participation in arenas for socialization, such as in school, organized leisure-time activities, or in other venues where they can meet peers.

Institutional staff are among the most often mentioned support providers by adolescents in RYC. As different adults successfully regulate different adolescents (Lakey & Orehek, 2011), a diversity in RYC staff's competence, education, and personal backgrounds is recommended. Such variation among the staff will increase the possibility that each adolescent has someone who matches individual interests or personalities and should be taken into account when primary contacts are decided for each adolescent. The adolescents should also have the opportunity to make suggestions for who of the staff that is the best suited person to have the responsibility as primary contact for themselves, based on trust and interpersonal characteristics. This will also increase the possibility of having staff who can successfully regulate different adolescents. Having a variety of personal and professional

backgrounds among the staff can further increase the number of adolescents who perceive someone among the institutional staff as supportive.

Finally, when adolescents turn 18 and are no longer under public care, aftercare should be highly prioritized and planned. Social development does not stop at this point. For adolescents with a high number of relationship disruptions, the transition to aftercare should not cause additional and unnecessary broken relationships. The role of RYC staff, primarily the adolescents' primary contact, should act as a coordinator in the transition process, as their role as support persons are central. It is important that each adolescent feels safe and cared for in this process, and significant adults should therefore be present to ensure stability and provide support. Finally, establishing tools, such as for example electronic communication, that can uphold the contact between the adolescent and significant caregivers for a period after they move from the institution, can possibly be helpful in this transition.

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Paper I

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ORIGINAL ARTICLE

WILEY CHILD & FAMILY SOCIAL WORK

Perceived social support among adolescents in Residential Youth Care

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Abstract

Social support may be of particular importance for vulnerable adolescents' development and health and can help them to cope with stressful life events. However, knowledge of perceived social support among adolescents in Residential Youth Care (RYC) is sparse. The present study therefore aimed to investigate perceived social support among adolescents in Norwegian RYC (*N* = 304, mean age 16.3 years, girls 57.2%), using a short form of the Social Support Questionnaire. The results were compared with adolescents in the general population. The findings revealed that adolescents in RYC reported a lower number of support persons compared with the general population. Both populations reported a decreasing number of support persons as they aged, except for girls in RYC. The adolescents in both populations were satisfied with the support perceived, especially those with the highest number of support persons. However, social support providers differed between the two populations; RYC adolescents reported their extended family, other sources of support, and the institutional staff more often and their parents less. The findings are important for adolescents living in RYC, as knowledge of their social support network could influence the current practices and ensure contact with important support persons, affecting their development and health.

KEYWORDS

child welfare, high risk, institutional staff, perceived social support, Residential Youth Care

1 | INTRODUCTION

Adolescents who have received interventions from child welfare services (CWS) report high rates of adversities, such as child abuse, neglect, family problems, and disrupted attachment (Collin-Vézina, Coleman, Milne, Sell, & Daigneault, 2011; Greger, Myhre, Lydersen, & Jozefiak, 2015; Racusin, Maerlender, Sengupta, Isquith, & Straus, 2005; Rushton & Minnis, 2002). When adolescents are placed in out-of-home care, foster homes are the preferred form of placement in Norway, and Residential Youth Care (RYC) placements are used as a last resort. Most placements in RYC are caused by major behavioural problems and/or substance use. Other reasons for RYC placement are difficult home conditions, a lack of parental care, and parental substance use (Backe-Hansen, Bakketeig, Gautun, & Grønningsæter,

2011). Adolescents living in RYC report high rates of psychiatric disorders (Jozefiak et al., 2016; Kepper, Van Den Eijnden, Monshouwer, & Vollebergh, 2014) and poor quality of life (Damnjanovic et al., 2012; Jozefiak & Kayed, 2015).

However, guidance, feedback, and support from significant others have been hypothesized (Sarason & Sarason, 1985) and found to buffer against serious negative life events (Bal, Crombez, Van Oost, & Debourdeaudhuij, 2003; Murberg & Bru, 2004), which adolescents in RYC have encountered, often in abundance (Berridge, Biehal, & Henry, 2012; Collin-Vézina et al., 2011). To optimize the care for and development of adolescents in RYC, it is vital to have basic information concerning the social support they experience and how it may differ from that of typically developing adolescents. As of today, such information is generally lacking. The overarching aim of the current inquiry was therefore to provide such data.

Social support has been defined as the availability of people who are supportive, caring, and loving (Sarason, Levine, Basham, & Sarason, 1983). Perceived social support reflects an individual's perception of the number of persons available to provide support, in addition to satisfaction with the support. Because diminished support is associated with low self-efficacy (Adler-Constantinescu, Beşu, & Negovan, 2013), self-esteem (Rueger, Malecki, & Demaray, 2010), and well-being (Chu, Saucier, & Hafner, 2010), as well as increased risk of mental health problems (Rueger, Chen, Jenkins, & Choe, 2014; White & Renk, 2012), the adolescents in RYC would likely benefit from perceiving social support from several sources to avoid these negative effects. A recent trend in out-of-home placements is kinship foster care (Thørnblad, 2011), which could make social support from extended family more avilable. However, being separated from the home environment could lead to a loss of social support for adolescents in RYC. Also, an institutional setting can make everyday leisure activities and friendships outside the institution hard to maintain (Kayed et al., 2015).

Whether adolescents in RYC actually reports a reduced number of support persons compared with the general population or not has yet to be determined.

A Croatian study claimed that children living in children's homes had a lower number of support persons compared with the general population, but no numbers were reported, and no information was given on the instrument used to measure the social support (Franz, 2004). In other high-risk groups, an American study of adolescents in foster care found that repeated and severe disruptions in attachments through several out-of-home placements were associated with less caring relationships with adults and a decrease in the number of support persons available (Perry, 2006). Mental health might also affect number of support persons (Kawachi & Berkman, 2001), and high-risk groups, such as adult psychiatric patients, report a lower number of support persons compared with the general population (Furukawa, Harai, Hirai, Kitamura, & Takahashi, 1999).

Sex differences in perceived social support has been reported, where girls report a significantly larger number of support persons than boys. These findings were found both in a German study among adolescents in RYC (mean age 15.55, with a follow-up 2 years later; Bender & Lösel, 1997) and in research on the general population (Gecková, Van Dijk, Stewart, Groothoff, & Post, 2003; Rueger et al., 2010). Sex differences in coping strategies when faced with difficult life situations may be associated with social support. Girls have been found to be more cautious when entering new social situations after negative life events (Hampel & Petermann, 2006; Piko, 2001), whereas boys redirect their energy to more pleasant activities (Compas, Orosan, & Grant, 1993; Piko, 2001). This can affect the way the adolescents perceive social support from the institutional staff. Also, depression and anxiety, more commonly diagnosed in girls (Bronsard et al., 2011; Jozefiak et al., 2016), have been found to be associated with low perceived social support (Kawachi & Berkman, 2001; Rueger et al., 2014).

A high number of support persons does not equate to high-quality social support, as factors such as personality and needs may determine whether large numbers of support persons or only a few are adequate (Sarason et al., 1983). Of note, as adolescents in RYC often have experienced challenging home conditions, parental support might not be of the same quality as for adolescents living at home. It is therefore important to examine satisfaction with support and whether a high number of support persons equate to high level of satisfaction or not. In addition, low levels of satisfaction is associated with symptoms of both emotional and behavioural problems among both adolescents (Bender & Lösel, 1997; Garnefski & Diekstra, 1996) and patients with severe mental illness (Furukawa et al., 1999; Thomas, Muralidharan, Medoff, & Drapalski, 2016), in addition to low quality of life among psychiatric patients (Bengtsson-Tops & Hansson, 2001). At present, no information is available on RYC adolescents' satisfaction with perceived social support. Because it is probable that adolescents in RYC have a lower number of support persons compared with adolescents living at home, as well as increased challenges in daily life and social relations, it is hypothesized that their satisfaction with the perceived support will be reduced compared with the general population.

It is also useful to consider how adolescents in RYC access social support while in RYC. As noted, social support from parents and peers can be difficult to maintain, as they are often separated from their home area, and the day-to-day interactions are rather with the institutional staff. Their role in providing support and a professional form of parenting is important for the adolescents' experience of living in a caring, homelike environment (Berridge et al., 2012). A Dutch study (Harder, Knorth, & Kalverboer, 2013) found that adolescents in secure RYC tended to use the institutional staff as secure attachment figures. One might implicate that institutional staff members, as the current care providers for these adolescents, hold an important role as support persons, given the absence of parental support.

Research on the general population has shown that both parents and peers are important support persons for adolescents (Frey & Röthlisberger, 1996). Parents provide psychological and instrumental support in daily matters and crises, with mothers more often than fathers being mentioned as support persons. In contrast, peers are a source of emotional support in day-to-day matters. Also, during adolescence, social behaviour develops towards independence from parents combined with an increasing reliance upon peers (Bokhorst, Sumter, & Westenberg, 2010; Collins & Laursen, 2004). Several studies have reported that perceived parental support declines and

perceived peer support increases before the age of 16 (Bokhorst et al., 2010; Levpušček, 2006). However, little is known about RYC adolescents' perceptions of social support and whether similar age-related patterns apply to them, as in the general population.

The overall aim of this study is to gain knowledge of perceived social support among RYC adolescents, given the paucity of information currently available. The number of support persons, the satisfaction with perceived social support, and the individuals from whom the adolescents in RYC perceive social support will be examined, as well as sex differences, and whether these aspects differ from adolescents in the general population. Also, it will be examined whether a high number of support persons is necessary to perceive high satisfaction with the support. Extrapolating from related research, it is hypothesized that adolescents in RYC have a lower number of support persons than adolescents in the general population and that boys report a lower number of support persons than girls. Also, it is hypothesized that perceived social support will decrease with age. Finally, it is hypothesized that adolescents in RYC are less satisfied with the support received than adolescents in the general population.

2 | METHOD

2.1 | Setting

The Norwegian Directorate for Children, Youth and Family Affairs is responsible for all public and private RYC institutions in Norway, except in the municipality of Oslo, which administers its own RYC. The institutions, which attempt to resemble ordinary home environments, are normally small, open units with three to five residents. A therapeutic milieu model is most often used at the institutions, and the staff members typically have limited knowledge of psychiatric diagnosis and treatment (Bufdir, 2010). The RYC is either organized with three shifts per day, or the staff members live with the adolescents for 3 to 7 days before having a longer period off. More than 90% of the adolescents report having contact with birth family or previous care givers, and almost 70% report attending school.

2.2 | Participants

2.2.1 | RYC sample

The data were obtained from the Norwegian research project "Mental Health in Adolescents living in Residential Youth Care" (Jozefiak & Kayed, 2015). A registry of all RYC institutions in Norway (N = 98) was created on the basis of information from the Norwegian Directorate for Children, Youth and Family Affairs. All institutions were contacted by a research assistant, and the leaders were informed about the project through written and oral communications. At this stage, 86 institutions volunteered for participation. The institutional leaders were given the responsibility for recruiting adolescents and collecting informed consent. After the institutional exclusion criteria were applied (see Figure 1), all adolescents and young adults aged 12–23 years living in RYC in Norway were invited to participate in the study, although no one over the age of 20 participated. After individual exclusions (see Figure 1), 601 eligible adolescents remained, of which 400 volunteered to participate, yielding a response rate of 67%. Because the Social Support Questionnaire (SSQ) was the last questionnaire to be completed, the attrition was high. Due to missing cases or incompletions (n = 96), the SSQ was completed by 304 participants. Analyses comparing completers with noncompleters of the SSQ did not find significant differences between the groups in terms of sex, age, or total score on the Child Behavior Checklist.

2.2.2 | General population Reference sample

The reference sample was drawn from the Young in Norway (YiN) study conducted in 1994, where all Norwegian junior and senior high schools (students aged 12–19 years) were included in a register from which the schools were selected. Cluster sampling was applied, and the sample was stratified according to geographical region, school size, and type (Wichstrøm, 1999). Following a first wave of data collection with 12,287 participants (Wichstrøm, 1999), the second national round used for comparison in this study had a response rate of 80% (N = 10,839; Wichstrøm, 2002), of which 8,769 completed the SSQ. From these, 1,674 were excluded due to the age criteria or missing reports of age and sex, yielding a response of n = 7,095. For further details about the YiN project, see (Wichstrøm, 1999).

Among the respondents in both samples, the girls had a slight dominance, with 57.2% (174/304) for adolescents in RYC and 52.9% (3,752/7,095) in the general population. The age distribution is shown in Table 1. The mean (SD) ages for adolescents in RYC and the general population sample, respectively, were 16.05 (1.51) and 16.58 (1.53) years for boys and 16.48 (1.25) and 16.68 (1.53) years for girls. The vast majority (86.9%) of respondents in both populations were aged 14–18 years.

2.3 | Procedures

2.3.1 | RYC sample

Four trained research assistants with comprehensive experience working with children and families and relevant bachelor or masters degrees collected data at the RYC institutions. The adolescents were approached individually and were recruited with approved procedures and informed consent. For participants younger than 16 years of age, consent was also obtained from a significant caregiver. The adolescents were asked to complete a series of questionnaires, lasting approximately 30 min. If they had trouble reading the questionnaire, it was read to them by the research assistant. All adolescents were compensated with 500 NOK for their participation, and iPhones were given to four randomly chosen adolescents. The data were collected from July 2011 until July 2014.

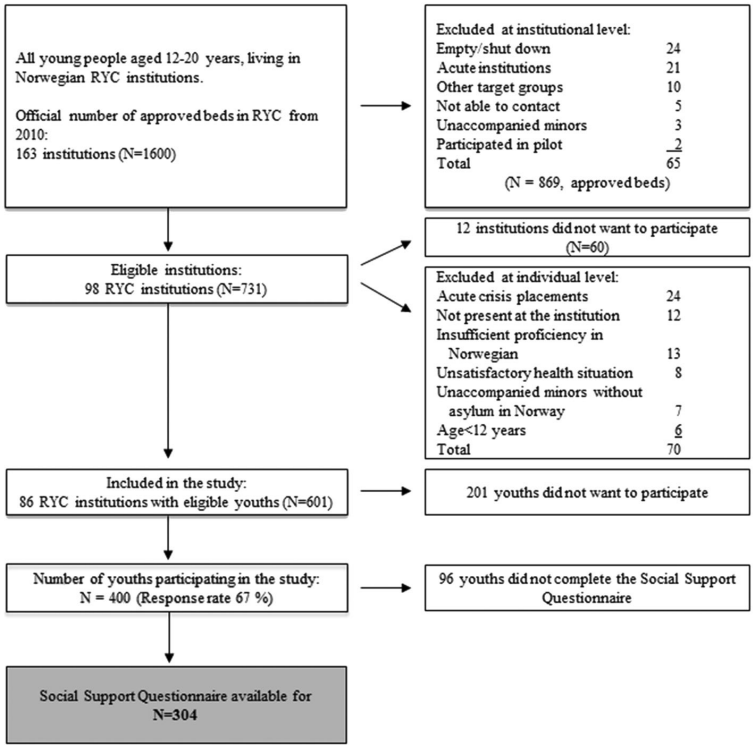

FIGURE 1 Flow chart of participants from the Residential Youth Care (RYC) sample. Not able to contact = if institutional staff did not respond to repeated approaches about participation over a period of several months. There were no significant differences between participating and nonparticipating institutions with regard to geography and ownership

TABLE 1 Age distribution for respondents in Residential Youth Care and the general population

Group						
Age	Residential Youth Care (%)		General population (%)		Total (%)	
12	5	(1.6)	1	(0.0)	6	(0.1)
13	6	(2.0)	4	(0.1)	10	(0.1)
14	19	(6.3)	587	(8.3)	606	(8.2)
15	44	(14.5)	1461	(20.6)	1505	(20.3)
16	81	(26.6)	1225	(17.3)	1306	(17.7)
17	99	(32.6)	1431	(20.2)	1530	(20.7)
18	41	(13.5)	1448	(20.4)	1489	(20.1)
19	8	(2.6)	938	(13.2)	946	(12.8)
20	1	(0.3)	0	(0.0)	1	(0.0)
Total	304	(100)	7095	(100)	7399	(100)

2.3.2 | General population sample

The students completed the questionnaires, which contained no personal identifiers, during two consecutive school hours. Each student placed the questionnaire in an envelope and sealed it personally. The students who were absent at the time of testing completed the questionnaire at a later time. The students under the age of 16 years provided written parental consent, whereas those 16 years or older consented themselves. The project was approved by the Norwegian Data Inspectorate.

2.4 | Instruments

2.4.1 | SSQ

A short five-item version of the SSQ (Wichstrøm & Hegna, 2003), modelled after Sarason et al.'s (1983) full version of 27 items and adapted to adolescents, was used to measure perceived social support. The SSQ examines to whom adolescents can turn in five hypothetical situations involving informational support, emotional support, and crisis intervention (see Table S1 for further information). Eight possible support persons (*mother*, *father*, *boyfriend/girlfriend*, *sibling(s)*, *friend(s)*, *relative(s)*, *neighbour(s)*, and *others*) are listed for each situation, together with the alternative *none*. In the RYC sample, *institutional staff* was added as an alternative, giving a total of nine listed potential support persons. In the general population sample, the respondents wrote the number of friends available for support, which was recoded to match the RYC data, such that mentioning any friends

was given the score of 1. In addition, satisfaction with the social support for each of the five hypothetical situations were measured on a Likert scale ranging from 1 to 4.

2.4.2 | Number of support person scores (SSQ-N and SSQ-R scores)

The SSQ-N score refers to the sum of the support persons listed over the five items (Sarason et al., 1983). Because the RYC participants had nine alternative support persons compared with eight alternatives available in the general population, the SSQ-N scores were not directly comparable between the samples. Therefore, the two SSQ-N scores were divided by the number of support persons available for each group (i.e., divided by 8 for the general population and 9 for the RYC population), giving a relative score (SSQ-R) that could be directly compared across samples. The five-item SSQ-N had an internal consistency of α = .77 when calculated across both populations.

2.4.3 | Satisfaction score for the perceived social support (SSQ-S score)

Satisfaction with social support was rated on a 4-point Likert scale for each of the five items, ranging from *very poorly satisfied* (1) to *very satisfied* (4), where a high value indicated higher satisfaction. A SSQ-S score (a mean score of satisfaction level across items) was obtained for both populations (Sarason et al., 1983).

2.5 | Statistical analyses

First, the SSQ-R scores were compared between the RYC population and the general population using Student's *t* test. Second, linear regression was used with the SSQ-R score as the dependent variable and group (the RYC population vs. the general population), age, sex, and all two- and three-way interactions as covariates.[1] The asymptotic Pearson chi-squared test was used to search for differences in the number of perceived social support persons. Finally, linear regression, with the SSQ-S score as the dependent variable and group, age, and sex as covariates, was used to analyse for differences in satisfaction between the groups. Linear regression was used to analyse the differences in SSQ-S scores according to the SSQ-R scores, with the SSQ-S score as the dependent variable and SSQ-R score, group, sex, and all two- and three-way interactions as covariates. Two-sided *P* values < .05 were regarded as statistically significant, and 95% confidence intervals (CIs) were reported where relevant. All the statistical analyses were conducted using SPSS 22.

2.6 | Ethics

The Norwegian Regional Committee for Medical and Health Research Ethics approved the project. Participants were recruited with approved procedures, and informed consent was always obtained, as previously described.

3 | RESULTS

3.1 | Number of support persons (SSQ-R)

The adolescents in RYC reported a significantly lower total number of support persons (M = 1.49, SD = .76) compared with the general population (M = 1.60, SD = .65; $t(322)$ = −2.430, p = .016, difference = −0.11, CI [−.20, −.02]).

The results of a linear regression analysis with the SSQ-R score as the dependent variable and group, age, sex, and all their interactions as covariates are illustrated in Figure 2. Details are provided in Table S2. In the RYC population only, the effect of age on the relative number of support persons differed between boys and girls (difference in slope = .123, p = .019). A significant difference was observed between sexes at the age of 14 (.30, 95% CI [.03, .58], p = .029), where

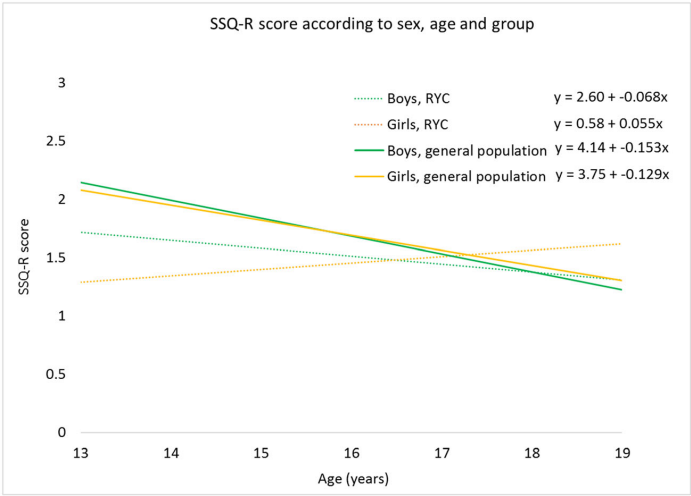

FIGURE 2 The SSQ-R score (relative number of support persons) for boys and girls in the two samples, from linear regression analysis with age, group and their interactions as covariates [Colour figure can be viewed at wileyonlinelibrary.com]

boys had a higher number of support persons than girls. The same pattern was not found at the age of 18 (−.19, 95% CI [−.41, .04], p = .104).

For boys in both populations, the number of support persons decreased with age, as shown in Figure 2, although it was less pronounced for the RYC population (difference in slopes = −.09, p = .020). At age 14, a lower number of support persons was found for boys in RYC compared with the general population (difference = −.34, 95% CI [−.53, −.16], p < .001), whereas no significant difference was seen at age 18 (−.001, 95% CI [−.18, .18], p = .989).

As seen in Figure 2 (and Table S2), the pattern for girls in the two populations differs. Although the number of support persons decreased with age for girls in the general population, it increased for girls in the RYC population (difference in slope = −.18, p < .001). At age 14, a lower number of support persons was found for girls in RYC compared with the general population (−.60, 95% CI [−.81, −.40], p < .001), whereas no significant difference was observed at age 18 (.13, 95% CI [−.02, .28], p = .085).

Several sensitivity analyses were completed. Because relatively few respondents in the two samples were below 14 or above 18 years of age, as seen in Table 1, a secondary linear regression analysis was carried out including only adolescents from 14 to 18 years of age. The same patterns as for the whole sample were found. The data were also analysed using nonlinear regression (LOESS regression curves), which showed similar patterns as the linear regression (data not shown).

For completeness, a three-way interaction was also examined. The three-way interaction was not statistically significant (p = .064), but all the variables were part of at least one two-way interaction that was statistically significant (see Table S2).

3.2 | Satisfaction with social support

Linear regression analyses showed that the SSQ-S score for adolescents in RYC (Mean *(SD)*) was 16.07 (4.123), compared with 16.22 (3.404) for adolescents in the general population. The maximum SSQ-S score was 20.00. Although adolescents in RYC reported a slightly lower SSQ-S compared with the general population, this was not significant (p = .27) when adjusted for sex and age.

The result of a linear regression analysis with SSQ-S score as dependent variable and SSQ-N score, group, and sex and all two- and three-way interactions as covariates is shown in Figure 3. The findings revealed that satisfaction with perceived social support was positively associated with the number of support persons for both populations. The association was slightly less for boys in RYC (b = .79, 95% CI [.07, 1.50], p = .031) compared with girls in RYC (b = 1.22, 95% CI [.53, 1.92], p = .001), boys in the general population (b = 1.60, 95% CI [1.41, 1.79], p < .001), and girls in the general population (b = 1.49, 95% CI [1.30, 1.68], p < .001). Variation within groups was higher among adolescents in RYC.

An additional linear regression analysis was carried out to investigate possible age effects, but age did not act as a confounder explaining the effects found in satisfaction with support and number of support persons in either of the two populations (data not shown).

3.3 | Providers of social support

Examining the identified providers of social support for adolescents in the two samples, a Pearson chi-squared test revealed that adolescents from the general population reported support from their mother, father, sibling(s), and neighbour(s) significantly more often compared with adolescents in RYC (see Table 2). Relative(s) was the only source of support mentioned significantly more often in the RYC sample. For the RYC adolescents, institutional staff was the third most reported source of social support, after friend(s) and mother.

4 | DISCUSSION

In this national study, the adolescents in RYC perceived support from a lower number of support persons than adolescents in the general population. For both the RYC boys and girls, perceived social support developed differently across age than for general population adolescents. Although the adolescents in RYC at the age of 14 perceived support from a lower number of support persons than the general population, especially for girls, no difference in the number of support

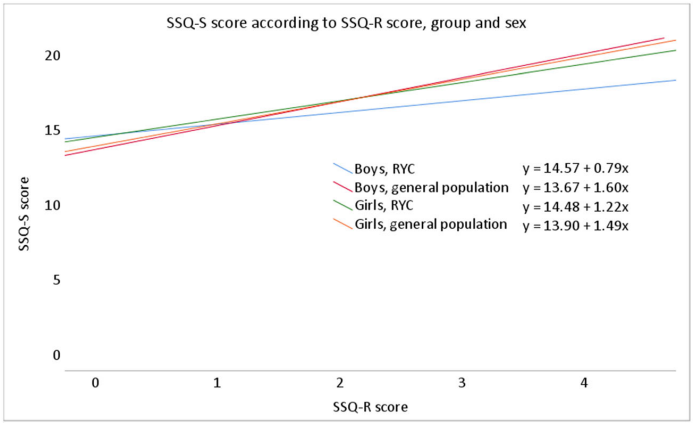

FIGURE 3 The SSQ-S score (satisfaction with social support) for boys and girls in the two samples, from linear regression analysis with SSQ-R score (relative number of support persons), group, sex, and their interactions as covariates [Colour figure can be viewed at wileyonlinelibrary.com]

TABLE 2 Reported support persons from the Residential Youth Care (RYC) and general population sample across the five Social Support Questionnaire items

	RYC (*N* = 304)		General population (*N* = 7,095)		
Support person	***n***	**%**	***n***	**%**	***p****
None	45	14.8	1,115	15.7	.668
Mother	208	**68.4**	6,578	**92.7**	**<.001**
Father	144	**47.4**	6,050	**85.3**	**<.001**
Boyfriend/girlfriend	155	51.0	3,394	47.8	.282
Sibling(s)	159	**52.3**	4,340	**61.2**	**.002**
Friend(s)	273	89.8	6,260	88.2	.404
Relative(s)	137	**45.1**	2,614	**36.8**	**.004**
Neighbour(s)	22	**7.2**	1,022	**14.4**	**<.001**
Institutional staff	196	64.5	—	—	—
Others	82	27.0	2,095	29.5	.339

Note. Each support person is only counted once, regardless of being mentioned as a support person in more than one item. **Bold** indicates significant differences between groups. The category "institutional staff" is only available for the adolescents in RYC.

*The asymptotic Pearson chi-squared test.

persons was observed overall at the age of 18. Despite the differences observed in the number of support persons, the RYC adolescents reported high satisfaction with the support. For both populations, an increasing number of support persons was associated with higher satisfaction with support. In addition, the RYC adolescents less frequently reported social support from their immediate family members compared with adolescents in the general population; rather, they reported relying on additional sources of support, such as relatives and institutional staff.

4.1 | Number of support persons

The findings that adolescents in RYC have a lower number of support persons available compared with adolescents from the general population was as expected, as the same pattern has been found among children's home residents in Croatia (Franz, 2004) and in other high-risk groups (Furukawa et al., 1999). Adolescents in RYC often have past experiences of abuse, neglect, or other negative life events that might affect their ability to develop supportive relationships. Experiencing several out-of-home placements and disruptions in attachments with family and friends requires them to establish new connections to maintain supportive social networks. This can be challenging. Leaders at RYC institutions report that the adolescents have difficulties in forming new relationships with adolescents outside the institutional setting and that they prefer unorganized over organized leisure activities (Kayed et al., 2015). These are factors that can influence perceived social support. Finally, the ability to perceive and accept social support might be affected by psychiatric disorders (Kawachi & Berkman, 2001) and lead to a reduced number of support persons (Furukawa et al., 1999). Jozefiak et al. (2016) found a prevalence of 76% of psychiatric disorders among RYC adolescents, which might partially explain their lower number of support persons compared with the general population.

A surprising finding was that the girls in RYC reported the lowest number of support persons available at the age of 14, which is inconsistent with previous research, where girls have reported a higher number of support persons than boys (Bender & Lösel, 1997; Gecková et al., 2003; Rueger et al., 2010). Differences in coping styles among boys and girls might explain these findings. Girls have a tendency to use passive ways of coping with difficult or challenging situations (Hampel & Petermann, 2006; Piko, 2001), making them cautious when entering new social contexts after experiencing several prior disrupted attachments. Girls might therefore seek new relationships for social support less often than boys. Boys tend to cope with difficult situations by emotion distracting through turning attention to more pleasant activities rather than to the acute situation (Compas et al., 1993; Piko, 2001). Seeking social contact instead of focusing on their feelings might positively affect boys' relations to the institutional staff and other residents. In addition, the observed differences between girls and boys in RYC might be explained by the fact that girls have been found to have a significantly higher prevalence of anxiety and depression (Jozefiak et al., 2016), which has been reported to be associated with low levels of support (Furukawa et al., 1999; Rueger et al., 2014).

According to age, the adolescents in RYC reported a lower number of support persons at the age of 14 compared with adolescents in the general population, whereas no difference was observed between the two groups at the age of 18. This interaction was caused by fewer support persons across age in the general population, whereas it remained relatively stable for the RYC adolescents. The findings might be explained by an increase in autonomy (Piko, 2001) and reduced reliance on adults, which is a natural part of the developmental process during adolescence. For some adolescents in RYC, their life situations might have expedited autonomy development at an earlier age, caused by family problems and out-of-home placements, reducing the likelihood of perceiving family members as supportive. At age 18, the reliance on and need for social support from adults is less pronounced.

4.2 | Satisfaction with support

The RYC adolescents appeared generally satisfied with the support they perceived and did not differ from the general population in this regard. This was an unexpected finding. Earlier research has found associations between low levels of satisfaction with social support and mental health problems among adolescents and adults (Garnefski & Diekstra, 1996; Thomas et al., 2016) and low quality of life for adult psychiatric patients (Bengtsson-Tops & Hansson, 2001). As the RYC adolescents also reported a high prevalence of mental health problems (Jozefiak et al., 2016) and a low quality of life (Damnjanovic et al., 2012; Jozefiak & Kayed, 2015), they were expected to report low satisfaction with support. It may be that when RYC adolescents report being satisfied with social support despite their negative life experiences

and challenges, this reflects lower expectations of social support than for adolescents growing up in functional families where support and care are readily available. Many of these adolescents have spent a long time in institutions, surrounded by other adolescents in the same deprived situation. Their social norm regarding quality of support may hence be formed with reference to this institutionalized group.

The previous research is inconclusive about whether a large number of support persons is necessary to perceive high-quality support. For both populations in this study, satisfaction increased with a higher number of support persons. Establishing and upholding existing supportive relationships both inside and outside the RYC institutions appears therefore important to ensure that the adolescents perceive support. At the same time, not all social relationships are constructive and facilitate appropriate and healthy development, maybe especially for this group of adolescents at high risk for substance abuse problems and conduct disorders (Backe-Hansen et al., 2011; Jozefiak et al., 2016; Kepper et al., 2014). It will therefore be important for the institutional staff to monitor how social relationships develop and affect the adolescents' daily functioning while in RYC.

4.3 | Providers of social support

The RYC adolescents reported support from their immediate family members and neighbours significantly less often compared with adolescents in the general population. These results were not unexpected because adolescents in RYC are separated from their family and home environment, often caused by difficult home conditions. At the same time, perceived social support from other relatives was more common among the RYC adolescents, indicating that these adolescents may favour using their extended family network for social support even though relationships with their immediate family members are disrupted. This tendency might be a consequence of the policy in CWS in recent years, where kinship foster care and placements in the children's wider social network are preferred (Thørnblad, 2011).

In addition, friend support was by far the most often mentioned source of support among the adolescents in RYC, followed by their mothers, who were second. RYC staff should facilitate the maintenance of the relations between adolescents and their friends and family. Also, institutional staff was the third most reported source of social support for adolescents in RYC, being mentioned almost as often as their mothers. Close to two-thirds of the RYC adolescents reported that staff members were supportive. Staff members were found to be important attachment figures that provided a caring environment (Berridge et al., 2012; Harder et al., 2013). The need for adolescents in RYC to find alternative sources of support in the absence of family support suggests that the members of the institutional staff are important support persons for these adolescents.

4.4 | Limitations

A limitation in the current study is the Social Support Questionnaire, measuring the number of support persons available and overall satisfaction on each item. In this form, satisfaction with the support from different support persons could not be determined. Also, the category of "friends" was only counted once regardless of how many friends were perceived as supportive, providing limited information about network size. In addition, because of the observational design, it is unknown whether the adolescents in RYC were already experiencing mental health problems when leaving their parents' home or they developed problems during their time in the care of the CWS. Finally, it is a limitation in the study that the data from YiN (collected in 1994) have a 20-year difference in time from when the data in the current study were collected. This difference in time might have caused secular effects. For example, smartphones and social media have influenced the way adolescents interact and have increased their perceptions of available providers of support (Best, Manktelow, & Taylor, 2014). The observed difference in the number of support persons is therefore likely to be a conservative result. Nonetheless, the YiN study provided the only comparable data from a general population sample.

For further research, we recommend adding more variables concerning the RYC adolescents background, such as length of stay in RYC, participation in organized leisure activities, and frequency of contact with birth family. This could add valuable information.

4.5 | Implications for practice

The current study underscores the important role that institutional staff play in providing social support for adolescents in RYC when living away from their family and friends. The support they provide should be of high quality, which might require training in relational competence for those working in RYC. Also, the adolescents' primary contacts have important roles as mentors for the adolescents and should have an extended role in providing social support for these vulnerable adolescents, as they often have the closest relationships with the adolescents.

In addition to strengthening the competence of the staff in relational processes, upholding contact between adolescents in RYC and their existing social support providers, as well as establishing new connections, should be prioritized when possible. As previous research has demonstrated, social support influences adolescents' mental health, perceptions of stress, and well-being. The quantity and quality of available social support should be a focus in interventions for these vulnerable youths.

As institutional staff members are important providers of social support for adolescents in RYC, they risk losing an important source of social support when moving out of institutional care at the age of 18. Placement in RYC, especially if some distance away from their home environment, may have disrupted their peer and family social support network. Receiving aftercare from the CWS could be of great importance for these adolescents and should last until the age of 23. This would give these adolescents time to settle into young adulthood.

5 | CONCLUSIONS

The current study is the first to broadly investigate perceived social support among adolescents in RYC, addressing both the number of support persons available, satisfaction with support, and the specific support providers for adolescents in RYC. Including adolescents from the general population for comparison provides an important context for the illuminating findings for adolescents in RYC.

In this study, adolescents in RYC perceive social support from a lower number of support persons compared with adolescents in the general population. Even though they have a lower number of support persons available, they are satisfied with the support. In addition, having a larger number of support persons is associated with higher satisfaction with the perceived support. As adolescents in RYC are in need of social support from an extended network, measures to increase social support in RYC are needed. As adolescents in RYC at a young age and especially girls perceive less social support than the general population, new measures should be implemented among the youngest adolescents. When adolescents live in RYC, measures should be taken to increase the availability of social support from family members and friends. Because institutional staff members are found to be important support persons for these adolescents, relational skills and competence among staff should be strengthened. In addition, initiatives such as aftercare following aging out of CWS should be ensured to avoid another disrupted attachment for these already highly challenged adolescents as they enter adulthood.

ACKNOWLEDGEMENTS

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ENDNOTE

[1]Because there was no significant differences in perceived social support between the adolescents attending school and those not attending school, we decided not to include the school variable in further analyses

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SUPPORTING INFORMATION

Additional supporting information may be found online in the Supporting Information section at the end of the article.

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Paper II

Perceived Social Support and Symptom Loads of Psychiatric Disorders among Adolescents in Residential Youth Care

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Abstract

Adolescents in residential youth care (RYC) are at high risk for negative psychological and social development outcomes, as they have a high prevalence of mental health problems and perceive less social support than adolescents in the general population. Associations between perceived social support and mental health problems have been investigated, but no in-depth analyses have been published. Such knowledge is crucial to optimize vulnerable adolescents' care while living in RYC. The present study, therefore, aims to investigate associations between the symptom load of four psychiatric disorders (the Child and Adolescent Psychiatric Assessment) and perceived social support (the Social Support Questionnaire) among 400 adolescents in Norwegian RYC facilities. The results reveal that a higher number of different types of support persons was associated with lower symptom loads for emotional disorders. In addition, girls reported lower emotional symptoms when perceiving support from their father, friends and RYC staff, while boys reported more behavioral symptoms with father support and lower behavioral symptoms with staff support. We conclude that RYC staff and friends hold important roles in providing social support when parental support is absent. We recommend maintenance of social networks for adolescents in RYC and further develop staff members' relational skills and competence.

Perceived Social Support and Symptom Loads of Psychiatric Disorders among Adolescents in Residential Youth Care

Adolescence is characterized by extensive cognitive, psychological, and social development (Blakemore, 2019; Christie & Viner, 2005), and adolescents living in residential youth care (RYC) are especially vulnerable to developmental problems in this areas. Growing up with severe psychosocial strains, such as abuse and neglect (Collin-Vézina, Coleman, Milne, Sell, & Daigneault, 2011; Greger, Myhre, Lydersen, & Jozefiak, 2015), exposure to

several out-of-home placements, and disrupted attachments are common among adolescents in RYC (Jozefiak & Kayed, 2015; Rushton & Minnis, 2002) and potentially have major negative implications for their further development. Adolescents with such experiences are at a high risk of developing one or more psychiatric disorders (Greger et al., 2015; Mills et al., 2013), and the lack of stable and supportive home conditions increases their risk for perceiving low levels of social support later in life (Ford, Clark, & Stansfeld, 2011; Franz, 2004). Because social support is crucial for adolescent development (Viner et al., 2012; Zarrett & Eccles, 2006), more knowledge is needed on the potential protective effect of social support for vulnerable adolescents living in RYC, especially the identification of those with greater social support needs. There is a paucity of research on such associations among adolescents in RYC. Therefore, this study aims to investigate associations between perceived social support and the symptom loads of four psychiatric diagnostic categories.

Mental Health Problems

Several studies have found a high prevalence of mental health problems among RYC youth (Bronsard et al., 2011; González-García et al., 2017). A recent Norwegian study, conducted on the same population as in the current study, found a psychiatric disorder prevalence rate of 76.2% based on the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV). Any depressive disorder (37.0%), any anxiety disorder (34.0%), and Attention Deficit Hyperactivity Disorder (ADHD) (32.3%) were the most frequent diagnoses or diagnostic categories (Jozefiak et al., 2016). No age differences were found in DSM-IV diagnoses in the Norwegian study, but consistent with the larger psychiatric literature, girls have been found to have more emotional problems than boys and boys more behavioral problems than girls (Bronsard et al., 2011; Jozefiak et al., 2016; Maneiro, Gómez-Fraguela, López-Romero, Cutrín, & Sobral, 2019).

Perceived Social Support

For adolescents striving for autonomy and psychosocial adjustment, perceived social support can positively influence healthy development into adult life (Viner et al., 2012; Zarrett & Eccles, 2006). Stability, predictability, and the quality of parental attachment in childhood lay the foundation for the development of social relationships (Brown & Wright, 2001; Hartup, 1989). As these factors are rarely present for adolescents in out-of-home care, it is unsurprising that previous research has reported a lack of social support in this group (Ford et al., 2011; Franz, 2004), especially for the youngest girls (Singstad, Wallander, Lydersen, Wichstrøm, & Kayed, 2019), as girls are in greater need of emotional support than boys (Costa, Melim, Tagliabue, Mota, & Matos, 2020; Lanctôt, Lemieux, & Mathys, 2016).

Social Support and Psychiatric Disorders

Social support has previously been related to psychiatric disorders, most frequently to depression, concluding that lower levels of social support predict higher levels of depression (Auerbach, Bigda-Peyton, Eberhart, Webb, & Ho, 2011; Rueger, Malecki, Pyun, Aycock, & Coyle, 2016). Associations with other psychiatric disorders have been investigated to a lesser extent and with contradictory findings, yielding connections to both anxiety (Essau et al., 2011; Festa & Ginsburg, 2011; Rueger, Malecki, & Demaray, 2010) and behavioral problems (Deane & Young, 2014; Windle, 1992). The diagnosis of ADHD differs from other psychiatric categories, as it is characterized by a lack of social and communication skills (Beckman, Janson, & von Kobyletzki, 2016), which might negatively affect adolescents' ability to form relationships (Gardner & Gerdes, 2015) and limit their social network. Research on direct associations between social support and ADHD is lacking. ADHD has most often been investigated as a mediator, where children with ADHD perceive less social support, especially from friends, than children without these symptoms (Beckman et al., 2016; Deane & Young, 2014; Schei, Nøvik, Thomsen, Indredavik, & Jozefiak, 2015). However,

none of this research has examined youth in RYC, which emphasizes the need for more in-depth explorations of the role social support might play in psychiatric disorders among these high-risk adolescents.

Social Support Providers

Parents and friends are most often reported as support persons for adolescents (Bokhorst, Sumter, & Westenberg, 2010; Frey & Röthlisberger, 1996). Because adolescents living in RYC lack parental care (Backe-Hansen, Bakketeig, Gautun, & Grønningsæter, 2011), institutional staff should provide a professional form of parenting (Harder, Knorth, & Kalverboer, 2013) and, consequently, support (Hoffnung Assouline & Attar-Schwartz, 2020). The quality of support from RYC staff has been found to affect adolescents in several areas (Wright, Richard, Sosnowski, & Kliewer, 2019). A recent study on the same population as the present study found that adolescents in RYC perceive less social support from immediate family members compared to adolescents living at home and, instead, relied on support from extended family members and RYC staff. Friends were most often reported as a provider of support (Singstad et al., 2019). Sex differences in the distribution of providers of social support have been found for adolescents, as boys perceive more support from fathers (Colarossi & Eccles, 2003) and immediate family members than girls (Frey & Röthlisberger, 1996), and girls perceive more support from friends than boys (Rueger et al., 2010). It remains to be explored how different social support providers might impact symptom loads of psychiatric disorders for adolescents living in RYC.

Social Support Providers and Psychiatric Disorders

Previous research has found that parental support predicts lower levels of both emotional and behavioral symptoms among adolescents (Colarossi & Eccles, 2003; Rueger et al., 2016; Yeung & Leadbeater, 2010). During adolescence, parental support decreases with increasing age and autonomy development, and social support from friends becomes more

important (Bokhorst et al., 2010; Levpušček, 2006). However, the results of previous research on friends' impact on adolescent mental health are contradictory. Friend support is associated with lower levels of depressive symptoms to a varying degree (Burke, Sticca, & Perren, 2017; Gariépy, Honkaniemi, & Quesnel-Vallée, 2016; Simoni & Bauldry, 2018). This finding also applies to anxiety, as some have found friend support to be a unique predictor of lower social anxiety among adolescents (Cavanaugh & Buehler, 2016), while others have not found such significant associations (Rueger et al., 2010).

For adolescents with behavioral problems, the effects of friend support appear dependent on the individuals involved. Higher levels of friend support are, in some settings, found to be associated with a lower prevalence of behavioral problems and risk-taking but might also be a risk factor for problem development. For example, delinquent adolescents often seek friendships with peers with the same behavioral characteristics as themselves (Telzer, Fuligni, Lieberman, Miernicki, & Galván, 2014). In this way, friend support can be associated with increased behavioral problems (Bender & Lösel, 1997). Beyond parental and friend support, other potential providers of social support and their associations with adolescent mental health have rarely been examined. This underscores the need for more detailed investigations of how different social support providers may affect vulnerable adolescents' mental health to better inform policy and program development.

Current Study

Because adolescents in RYC report a high prevalence of psychiatric disorders, which is a known risk factor for unhealthy development and further problems in adult life, it is important to identify potential protective factors. Social support is a strong candidate in this regard. Therefore, the current study investigates (1) associations between the symptom load of depression, anxiety, conduct disorder (CD), and ADHD and the number of different types of perceived support persons among adolescents in RYC, as well as (2) associations between

symptom loads of the psychiatric categories and the presence of different types of perceived social support providers, including the adolescent's mother, father, friends, and institutional staff.

Methods

Setting

In Norway, adolescents aged 12-23 (>18 only if volunteering for placement) can be placed in RYC when foster homes are unable to provide adequate monitoring and support for satisfactory development. Placements in out-of-home care can be due to several factors. For the current sample, reasons for the first out-of-home placement were most often problems between parents and the child (43.4 %), individual characteristics of the child (30.6 %), and parental characteristics (25.6%). Problems between the parents and the child refers to for example constant arguing, violence, disrespect or disagreements leading to the adolescent not complying with rules and restrictions by for example running away from home. The individual chatacteristics of the child/parent refers to one of the individuals experiencing extensive problem with for example anger, violent behaviour, substance abuse, or wide-ranging mental health problems. Placements in Norwegian RYC institutions are determined by the Child Welfare Act, and are used as the last resort and apply to adolescents with wide-ranging previous and present challenges with a need for extensive supervision, support, and services.

RYC institutions are often small units with three to five residents, where the staff provide care, stability, and monitoring in the absence of parental care. RYC staff often use a milieu therapeutic model, and as the adolescents primary care givers, they provide substitute parenting through everyday care and a home-like environment supporting the adolescents in their daily activities. RYC institutions are primarily serving as the youths' home-base under supervision and where some supportive and counseling care are provided by paraprofessional

staff. They are not primary treatment facilities. Rather, direct treatment is provided through other programs such as primary health care, specialized mental health services, child protective services, and social welfare services. While living in RYC, each adolescent has one primary contact who has the overall responsibility for him or her (Bufdir, 2010). The number of staff members at each institution differs, as some institutions are organized with three shifts per day, and some live with the residents for longer periods (i.e., 3-7 days) before having a longer period off. Since the quality of the adolescent-staff relationship is crucial for providing a secure base, the personal qualities of staff members are highly valued when hiring for positions in RYC. Because only 50% of staff members are required to have relevant education, their knowledge of psychiatric diagnoses and treatment is often limited (Bufdir, 2010). Most adolescents living in RYC (> 90%) have contact with their parents or previous caregivers, and almost 70% attend school. All RYC institutions in Norway, except for those in the municipality of Oslo, are under the responsibility of the Norwegian Directorate for Children, Youth, and Family Affairs, a national governmental agency.

Participants

Data from the research project titled 'Mental Health in Adolescents Living in Residential Youth Care' (Jozefiak & Kayed, 2015) were used in this study. In this project, all 98 RYC institutions in Norway were invited to participate, of which 86 (87%) serving 671 residents agreed. Both written and oral communications were used to inform institutional leaders about the project before they were given the responsibility of recruiting adolescents at their respective institutions. After the individual exclusion criteria were applied, which included acute placements (N = 24), not present at the institution (N = 12), insufficient proficiency in Norwegian (N = 13), an unsatisfactory health situation (N = 8), unaccompanied minors without asylum in Norway (N = 7), and not meeting the age inclusion criteria of being 12–23 years old (N = 6), 601 adolescents and young adults were available for participation. Of these,

201 did not want to participate, leaving 400 who volunteered. An attrition analysis was conducted from anonymous CBCL scores for non-participants, with statistically significant results, showing a high degree of representativeness of participants on mental health scores. For further information, please see Jozefiak et al. (2016).

The Child and Adolescent Psychiatric Assessment (CAPA) interview was completed by 335 of 400 adolescents. The inability to concentrate throughout the interview was the main reason for incomplete interviews. The Social Support Questionnaire (SSQ) was completed by 304 adolescents. Further analysis did not find significant differences between SSQ completers and non-completers in terms of sex, age, or age at first out-of-home placement. The high attrition rate was likely due to SSQ being the last questionnaire to be completed. Complete SSQs and CAPAs were available for 266 participants. Because Child Behavior Check List (CBCL) scores were available for the participants , multiple imputations could be used to estimate DSM-IV diagnoses, increasing the total N for the analysis to 304 respondents, including all those who completed the SSQ. They had similar distributions of sex, age, and total CBCL scores (data not shown), as did those who did not complete the SSQ. Table 1 presents further information about the participants.

Procedures

Data were collected at each RYC institution by trained research assistants, who interviewed the adolescents and their primary contact staff member. The research assistants had Bachelor's or Master's degrees in relevant fields, in addition to extensive experience in working with children, adolescents, and their families. CAPA administration lasted approximately 4 hours per adolescent. The time spent responding to the other questionnaires was about 30 minutes. To minimize the strain of data collection, breaks were adapted to the adolescent's needs, and data collection could be carried out over two days. A research assistant was present throughout the data collection process to provide help if needed by, for

example, reading questions. A team of psychiatrists and psychologists was also on call in case their expertise was necessary during the interviews. The adolescents were compensated with 500 NOK, and four randomly chosen adolescents won an iPhone. Data were collected lasted from July 2011 to July 2014.

Instruments

The Child and Adolescent Psychiatric Assessment (CAPA) is a semi-structured psychiatric interview investigating a wide range of psychiatric symptoms and diagnoses for children and adolescents according to DSM-IV (Angold & Costello, 2000). Diagnoses are set according to prevalent symptoms over the past three months, during which time 90% of the adolescents lived in the current RYC institution. The current study investigated the adolescents' symptom loads of the most prevalent diagnoses or diagnostic categories, measured by symptom frequency, including anxiety (total symptom load of agoraphobia, generalized anxiety disorder, social phobia, specific phobia, and panic attacks) and depression (total symptom load of major depressive disorder and dysthymia), in addition to the diagnoses of CD and ADHD. To avoid counting overlapping symptoms more than once in the depression category, similar symptoms of major depressive disorder and dysthymia were merged and counted only once. Information about symptoms and diagnostic criteria for ADHD were obtained through interviews with the adolescents' primary contacts at the institutions, using the parent version of the CAPA interview (PAPA) (Angold & Costello, 2000). The maximum number for the symptom loads of each diagnostic category was: k = 10 for anxiety, k = 11 for depression, k = 15 for CD, and k = 19 for ADHD. To ensure valid diagnostics, meetings with master coders were held regularly, and blinded interviewers recoded more than 10 percent of the audio-taped interviews (N = 42). Interrater reliability between raters was good (2016). CAPA test-retest reliability was found to be adequate, with kappa values ranging from .74 to 1.0, except for CD, with kappa = .55 (Angold & Costello, 2000).

To measure perceived social support, the 5-item version of the SSQ (Wichstrøm & Hegna, 2003), modeled on the full version (Sarason, Levine, Basham, & Sarason, 1983), was used and adapted to adolescents. Other researchers have also validated and used the SSQ to

measure perceived social support among both vulnerable and traumatized adolescents, in addition to adolescents in residential care (Bal, Crombez, Van Oost, & Debourdeaudhuij, 2003; Dumont & Provost, 1999; Magalhães & Calheiros, 2017). Social support can be defined in several ways and measured with a variety of instruments. As perceived social support assesses individuals perceptions of available support persons in times of need (Chu, Saucier, & Hafner, 2010; Sarason et al., 1983), we find this as the most relevant concept for adolescents in out-of-home care since the objective presence of supportive people does not secure that the individual actually perceive support (Rascle, Bruchon-Schweitzer, & Sarason, 2005). SSQ measures perceived social support by providing two scores addressing complementary aspects of social support, SSQ-N and SSQ-S. The SSQ-N score examines the number of different types of perceived support persons available in five hypothetical situations (e.g., *Who can you really count on when you have a personal problem and are feeling sad?*, and *Who can you turn to for advice when you must accept or decline an offer concerning education or work?*). For each of the five situations (items), nine possible types of support persons are listed in addition to the alternative *none*, including *mother*, *father*, *boyfriend/girlfriend*, *sibling(s)*, *friend(s)*, *relative(s)*, *neighbor(s)*, *institutional staff*, and *others*. The SSQ-N score is the sum of the number of different types of perceived support persons listed over the five items (maximum score = 45). To avoid social support providers being counted more than once (e.g., if 'mother' is marked as a support person on several items), an overall SSQ-N score was calculated, dividing the SSQ-N score by the number of items (k = 5). This score, therefore, reflects from how many types of people the adolescent perceives support and, in this sense, the breadth of his or her social support network. In addition, the SSQ-S score examines the adolescents' satisfaction with the perceived social support in each situation. Because preliminary results showed that 270 of the 304 adolescents were satisfied with their perceived social support, we chose not to include satisfaction in

further analyses due to the low variance. The short form of the SSQ had an internal consistency of $\alpha = .79$ for SSQ-N and $\alpha = .76$ for SSQ-S.

Statistical Analyses

Descriptive statistics for symptom loads, perceived social support, and comparisons between the sexes are shown for the original data in Table 1. Because CBCL scores were available for the respondents, and are found appropriate for assessing a variety of mental health problems (Biederman et al., 1993; Chen, Faraone, Biederman, & Tsuang, 1994; Hudziak, Rudiger, Neale, Heath, & Todd, 2000), we could substitute missing DSM-IV values by using multiple imputations (MI), and estimating missing DSM-IV scores for 304 adolescents. MI has earlier been used on the same sample to study prevalence rates for psychiatric diagnoses, finding that the estimated prevalence rates showed small deviances from the observed rates (Greger et al., 2015; Jozefiak et al., 2016). Achenbach and colleagues have found spesific CBCL items to be consistent with particular DSM-IV categories (Achenbach, Dumenci, & Rescorla, 2001, 2003), making it suitable for use in MI. To increase precision, we created 100 imputed datasets, which is considered sufficient (van Buuren, 2018). In the imputation model, we used all variables included in the analyses, as well as the following scales from the available CBCL scores: anxiety, withdrawn/depressed, somatic complaints, social problems, thought problems, attention problems, rule-breaking behavior, aggressive behavior, other problems, and other syndromes. Imputation was performed separately by sex. We chose not to restrict the imputed values to the possible range, as recommended by Rodwell, Lee, Romaniuk, and Carlin (2014). For the remaining analyses, the imputed dataset was used.

We used linear regression analyses, with symptom loads of each psychiatric category individually as dependent variables, with overall SSQ-N scores and age as covariates. Because previous researchers have localized age differences in perceived social support

among adolescents in RYC (Rodwell et al., 2014), age was included as a covariate. We utilized two alternative models: (1) one model including an interaction between sex and SSQ-N and (2) separate analyses by sex. In the separate analyses by sex, we found substantially different residual variances for girls (3.94^2) and boys (2.00^2). This means that the assumption underlying alternative (1) was violated, and we present the results for alternative (2). Associations between the symptom loads of the psychiatric categories and each provider of social support were investigated using an independent samples t-test. Two-sided p-values less than 0.05 are regarded as statistically significant, but due to multiple hypotheses, p-values between 0.01 and 0.05 should be interpreted with caution. We report 95% confidence intervals (CI) where relevant.

Results

Differences Between Girls and Boys

Girls represented 57.2% (174/304) of the total sample. The age spread among the respondents were between 12 and 20, with a mean age (SD) of 16.29 (1.38). The mean age (SD) for girls = 16.48 (1.25) and boys = 16.05 (1.51).

Table 1
Distribution of symptom loads of psychiatric disorders and social support for adolescents living in residential youth care.

	All participants		Girls		Boys		
	n	Mean (SD)	n	Mean (SD)	n	Mean (SD)	p*
Symptom load							
Depression (0-11)	266	3.09 (2.73)	152	3.80 (2.85)	114	2.15 (2.24)	**<.001**
Anxiety (0-10)	266	1.40 (1.87)	152	1.85 (2.02)	114	.81 (1.45)	**<.001**
CD (0-15)	266	1.38 (1.53)	152	1.20 (1.50)	114	1.61 (1.55)	**.034**
ADHD (0-19)	291	5.62 (4.76)	166	5.49 (4.63)	125	5.79 (4.94)	.60
Social support							
Overall SSQ-N	301	2.71 (1.35)	173	2.68 (1.28)	128	2.76 (1.44)	.75
SSQ-S	300	16.07 (4.12)	172	16.30 (4.09)	128	15.76 (4.16)	.26
Mother support	304	2.11 (1.92)	174	2.16 (1.95)	130	2.05 (1.89)	.65
Father support	304	1.30 (1.72)	174	1.06 (1.55)	130	1.62 (1.87)	**.007**
Friend support	304	3.11 (1.67)	174	3.19 (1.64)	130	3.00 (1.72)	.33
Staff support	304	1.85 (1.81)	174	1.81 (1.83)	130	1.89 (1.78)	.70

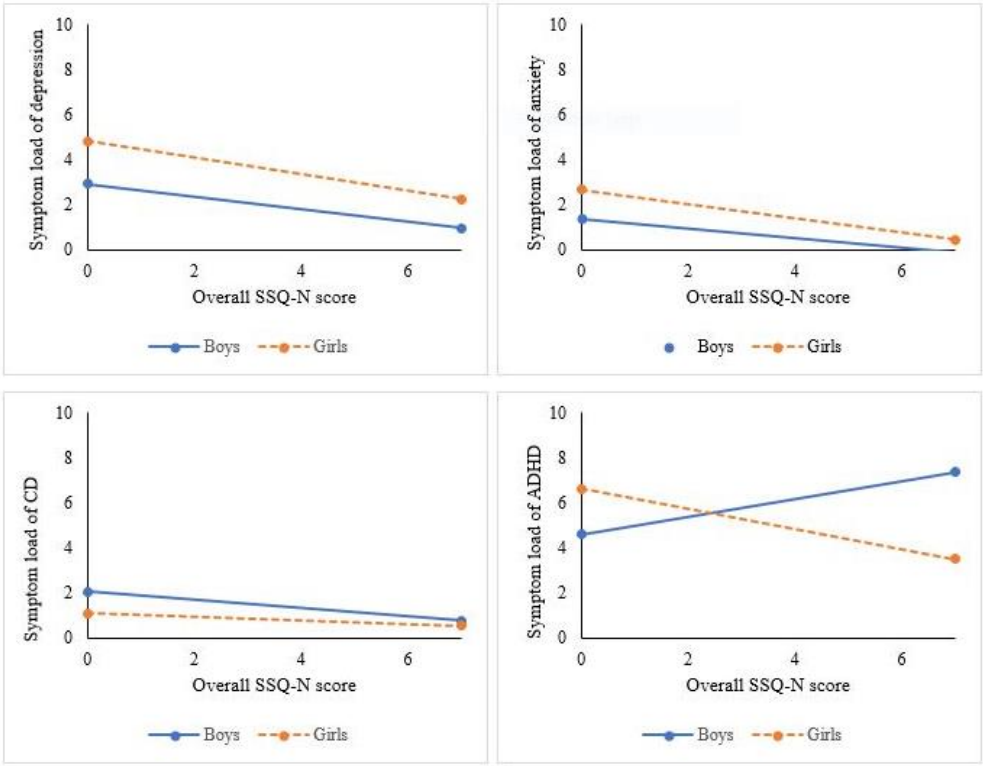
Note. Results are based on unimputed data. CD = conduct disorder; ADHD = attention deficit hyperactivity disorder; SSQ-N = number of different types of perceived support persons from the Social Support Questionnaire; SSQ-S = satisfaction with social support from the Social Support Questionnaire.
Bold indicates significant differences between groups ($p<0.05$).
*Students t-test was used to investigate differences between girls and boys.

As shown in Table 1, there were sex differences in the prevalence of psychiatric symptoms, as girls had more symptoms of depression (mean = 3.80 vs. 2.15, $p < .001$) and anxiety (mean = 1.85 vs. 0.81, $p < .001$) and fewer symptoms of CD (mean = 1.20 vs. 1.61, $p = .034$) than boys. No significant differences were found in ADHD symptoms (mean = 5.49 vs. 5.79, $p = 0.60$).

For the breadth of the sources of social support (SSQ-N), no significant sex differences ($p > .05$) were found, but boys had slightly more within-group variation in the number of different types of perceived support persons compared to girls. When investigating each provider of social support separately, only parental support differed significantly between the groups, as boys reported their father as a support person more often than girls ($p = .007$). No significant differences were found in reporting support from the mother, friends, or institutional staff ($p > .05$).

Number of Different Types of Support Persons and Symptom Load of Psychiatric Disorders

Figure 1
The symptom loads of each diagnostic category as a function of overall SSQ-N score.



Note. Based on results from the regression analyses presented in Table 2, for girls and boys, at an average age of 16.3 years. No one reported more than 7 support persons available, so the x-axes end at 7. SSQ-N = number of different types of perceived support persons; CD = conduct disorder; ADHD = attention deficit hyperactivity disorder.

Table 2
Linear regression with each diagnostic category as dependent variables, and overall SSQ-N score (number of different types of perceived support persons) and age as covariates. Regression coefficient estimates (β), confidence interval (CI) and p-values.

	Girls				**Boys**			
	β	95% CI		*p*	β	95% CI		*p*
		Lower	Upper			Lower	Upper	
Symptom load depression								
Intercept	8.859	2.843	14.875	**.004**	2.256	-2.577	7.090	.36
Overall SSQ-N	-.364	-.716	-.012	**.043**	-.279	-.569	.011	.059
Age	-.248	-.611	.115	.18	.042	-.245	.330	.77
Symptom load anxiety								
Intercept	2.285	-1.993	6.562	.30	2.417	-.808	5.642	.14
Overall SSQ-N	-.318	-.564	-.072	**.011**	-.214	-.409	-.020	**.031**
Age	.024	-.234	.281	.86	-.063	-.254	.128	.52
Symptom load CD								
Intercept	.113	-3.230	3.455	.95	3.494	.024	6.963	**.048**
Overall SSQ-N	-.078	-.273	.117	.43	-.183	-.389	.022	.08
Age	.075	-.126	.276	.46	-.088	-.293	.118	.40
Symptom load ADHD								
Intercept	.946	-8.324	10.216	.84	16.506	6.900	26.113	**.001**
Overall SSQ-N	-.444	-.992	.105	.11	.392	-.206	.990	.20
Age	.349	-.212	.910	.22	-.730	-1.306	-.155	**.013**

Note. Results are based on multiple imputed data. CD = conduct disorder; ADHD = attention deficit hyperactivity disorder.

The results of linear regression analyses with symptom loads as dependent variables, adjusted for age, are presented in Figure 1 and Table 2. A higher number of different types of support persons was significantly associated with a lower symptom load of depression for girls (p = .043) but not for boys (p = .059). A higher number of different types of support persons was also significantly associated with a lower symptom load of anxiety for both girls (p = .011) and boys (p = .031). No significant associations were found between the number of different types of support persons and the symptom loads of CD or ADHD for either girls or boys.

Providers of Social Support and Symptom Load of Psychiatric Disorders

Table 3
Differences in symptom loads for adolescents living in RYC based on perceived social support from four social support providers, separately for girls and boys.

	Girls						Boys					
	No support		Support		Group difference		No support		Support		Group difference	
Symptom load	n	Mean	n	Mean	estimate [95 % CI]	*p*	n	Mean	n	Mean	estimate [95 % CI]	*p*
Mother support												
Depression	57	3.94	117	3.74	.202 [-.80 to 1.20]	.69	39	2.59	91	2.00	.584 [-.34 to 1.51]	.21
Anxiety	57	1.85	117	1.82	.030 [-.66 to .72]	.93	39	.85	91	.81	.042 [-.59 to .67]	.90
CD	57	1.04	117	1.20	-.156 [-.71 to .39]	.58	39	1.67	91	1.56	.105 [-.54 to .75]	.75
ADHD	57	4.94	117	5.80	-.862 [-2.37 to .65]	.26	39	5.65	91	5.94	-.287 [-2.20 to 1.63]	.77
Father support												
Depression	99	4.13	75	3.38	.745 [-.16 to 1.65]	.11	61	2.42	69	1.97	.452 [-.38 to 1.28]	.29
Anxiety	99	2.12	75	1.45	.677 [.02 to 1.33]	**.042**	61	.90	69	.75	.146 [-.41 to.70]	.61
CD	99	1.12	75	1.18	-.052 [-.56 to .46]	.84	61	1.62	69	1.57	.045 [-.56 to.65]	.88
ADHD	99	5.47	75	5.57	-.099 [-1.53 to 1.33]	.89	61	4.57	69	6.98	-2.41 [-4.12 to -.70]	**.006**
Friend support												
Depression	16	5.76	158	3.61	2.153 [.59 to 3.72]	**.007**	15	1.50	115	2.27	-.764 [-2.12 to.59]	.27
Anxiety	16	3.65	158	1.65	2.007 [.92 to 3.09]	**<.001**	15	.42	115	.88	-.458 [-1.35 to.44]	.32
CD	16	.81	158	1.18	-.366 [-1.23 to .50]	.41	15	1.61	115	1.59	.019 [-.95 to.98]	1.00
ADHD	16	6.25	158	5.44	.806 [-1.64 to 3.25]	.52	15	7.27	115	5.66	1.602 [-1.11 to 4.31]	.25
Staff support												
Depression	66	4.47	108	3.40	1.075 [.14 to 2.01]	**.024**	42	2.33	88	2.10	.231 [-.67 to 1.13]	.62
Anxiety	66	1.98	108	1.74	.235 [-.44 to .91]	.50	42	.81	88	.83	-.019 [-.62 to.59]	.95
CD	66	1.37	108	1.01	.358 [-.16 to .87]	.17	42	2.08	88	1.36	.720 [.10 to 1.34]	**.023**
ADHD	66	6.45	108	4.95	1.502 [.06 to 2.95]	**.042**	42	5.16	88	6.18	-1.019 [-2.89 to.85]	.29

Note. Results are based on multiple imputed data. "No support" yields for adolescents missing support from the actual support provider and "Support" yields for adolescents reporting support from each provider. Maximum symptom score for each diagnostic category: depression = 11; anxiety = 10; CD = 15; ADHD = 19. RYC = residential youth care; CI = confidence interval; CD = conduct disorder; ADHD = attention deficit hyperactivity disorder. **Bold**: $p<0.05$.

Associations between different providers of social support and symptom loads of the four psychiatric disorders are shown in Table 3. Perceived social support from the mother was not associated with the symptom load of any of the four psychiatric categories for either sex. Perceived paternal support was associated with a reduced symptom load of anxiety for girls and an increased symptom load of ADHD for boys. Perceived social support from friends was significantly associated with lower symptom loads of depression and anxiety for girls but not for boys. Finally, perceived social support from the RYC staff was associated with lower symptom loads of depression and ADHD for girls and CD for boys.

Discussion

Our results show that perceived social support from several sources is associated with better mental health for adolescents living in RYC. For both girls and boys, a higher number of different types of support persons was associated with a lower symptom load of emotional problems. When investigating the different types of social support providers, girls had a lower symptom load of emotional problems when perceiving social support from father, friends, and RYC staff, in addition to a lower symptom load of ADHD when perceiving social support from the RYC staff. For boys, the associations were primarily found for behavioral problems, as they showed a lower symptom load of CD when perceiving social support from the RYC staff and higher symptoms of ADHD when reporting social support from their fathers. Thus, perceiving support from RYC staff appears to be especially important for these adolescents regardless of sex.

Number of Different Types of Support Persons and Symptom Load of Psychiatric Disorders

For adolescents living in RYC, a higher number of different types of support persons is associated with reduced symptoms of depression for girls, which is consistent with previous research on the positive effects of a broad social network (Auerbach et al., 2011; Rueger et al., 2016). Having several support persons available might intensify the perception of support and protect against depressive symptoms. In addition, having a broader support network should make support more readily available in stressful situations, possibly enhancing resilience. In addition, because girls tend to value the emotional aspects of social support to a greater extent than boys (Lanctôt et al., 2016; Levpušček, 2006; Youniss & Smollar, 1987), this might explain the identified sex difference in associations with depressive symptoms.

Regarding anxiety, a broader social network was associated with fewer symptoms for both girls and boys. A high prevalence of anxiety symptoms can make it challenging to

initiate new social relationships, often resulting in reduced social support. Previous research has found anxiety disorders to be associated with avoidant behaviors, especially for social interactions (Auerbach et al., 2011). As adolescents in RYC often have experiences with unstable home situations (Greger et al., 2015; Rushton & Minnis, 2002) and a lack of parental care (Backe-Hansen et al., 2011), they tend to rely on support persons other than their parents (Singstad et al., 2019). The availability of several different types of support providers to rely on when needed may decrease symptoms of anxiety for this vulnerable group of adolescents. However, no significant associations were found between the breadth of sources of social support and symptoms of CD or ADHD.

Providers of Social Support and Symptom Load of Psychiatric Disorders

Parents are typically the stable primary social support providers during adolescence. Because the adolescents in RYC are separated from their parents, it is crucial to investigate whether parents are able to provide support when their adolescent child is living in RYC or whether other providers of support can offer the same beneficial effect to adolescents' mental health. Generally speaking, parental support was not associated with psychiatric symptom load. However, other sources of support were to varying degrees. More specifically, for girls, a lower symptom load of depression was associated with perceived social support from friends and RYC staff. Because girls benefit from emotional support through one-to-one interactions and closeness in their interactions with others (Burke et al., 2017; Costa et al., 2020; Frey & Röthlisberger, 1996; Lanctôt et al., 2016), this result is unsurprising. Previous research has reported that friends are highly valued as support persons during adolescence (Bokhorst et al., 2010; Levpušček, 2006; Singstad et al., 2019). Even though the associations between depression and friend support varies in strength (Gariépy et al., 2016; Simoni & Bauldry, 2018), it seems that emotional support can be especially influential (Burke et al., 2017). In addition, RYC staff can provide the stability needed to compensate for the identified

lack of parental support (Backe-Hansen et al., 2011; Singstad et al., 2019). As parental support affects general population adolescents' depression (Colarossi & Eccles, 2003; Gariépy et al., 2016), our results raise the possibility that the beneficial effects of parental support can be replaced by social support from friends and RYC staff for girls, which is encouraging.

Friend support was also associated with a reduced symptom load of anxiety for girls, and previous research on social anxiety support this finding (Cavanaugh & Buehler, 2016; Festa & Ginsburg, 2011). Having friends to talk to and someone to listen and provide a feeling of acceptance is important (Festa & Ginsburg, 2011), as these close interactions can offer a safe environment, acceptance, and feelings of self-worth, leading to a decrease in anxiety symptoms. In this regard, the RYC staff should serve an important role in facilitating regular contact and interactions between RYC adolescents and valuable support persons and should ensure that girls in RYC have access to friend support while living in care.

In addition, girls perceiving social support from RYC staff reported a reduced symptom load of ADHD. As ADHD includes both emotional and behavioral symptoms, the perception of social support can differ according to the individual symptom load. As girls have a higher prevalence of the emotional symptoms of ADHD and show less physical aggression than boys (Rucklidge, 2008), they might benefit in this regard from perceived emotional support from the staff (Lanctôt et al., 2016). However, if the associations are due to behavioral aspects of ADHD, their relationships with staff are crucial. If a stable foundation is present, and the adolescents perceive the staff as supportive, they are more likely to accept the institution's rules and restrictions. When the girls follow expectations for behavioral control, it can lead to reduced antisocial behavior (Lanctôt et al., 2016).

For boys, perceived support from the RYC staff is associated with a reduced symptom load of CD. Previous experiences of child maltreatment and unstable home conditions are known risk factors for later behavioral problems, including CD (Fitton, Yu, & Fazel, 2018;

Greger et al., 2015), and boys tend to show more severe and aggressive behavior than girls (Maneiro et al., 2019). As boys tend to adopt negative behavior from their surroundings (White & Renk, 2012), and their friendships mostly involve group interactions and activities (Youniss & Smollar, 1987), being separated from their former milieus may have positive effects on reducing their behavioral problems. Being surrounded by stable and predictable adults in the form of RYC staff who provide a caring environment and social support, albeit with clear restrictions and rules, might also regulate boys' aggressive behavior, leading to a reduction in CD symptoms.

A surprising finding was the association between boys' higher symptom load of ADHD and perceived social support from their fathers. Even though previous research has stated that paternal support is not as common as other sources of support (Singstad et al., 2019) and that the effects of paternal support on mental health can be negative (Colarossi & Eccles, 2003), this finding differs from the majority of previous research studies (Rueger et al., 2016; Yeung & Leadbeater, 2010). However, fathers might have a tendency to use a critique-based approach lacking in empathy in their response to adolescents' difficulties and challenges (White & Renk, 2012), which can seem provoking and lead to a higher level of behavioral problems.

A striking result was the lack of significant associations between perceived social support from mothers and symptom loads for both sexes. The lack of associations can be a result of growing up with challenging home-conditions (Greger et al., 2015), resulting in a negative impact on the mother-child relationship, and the absence of high-quality support and stability. When these adolescents live in RYC, the mothers' influence on the symptoms of psychiatric disorders is most likely reduced as a consequence of their absence.

The findings from this study suggest that increased perceived social support is associated with lower symptomatology. We acknowledge that the reverse relationship could

also be at play, as adolescents with adverse mental health problems might have difficulties identifying social support. This will also apply to the adolescents' backgrounds, as previous ACE coupled with a lack of parental care and support can affect their trust in others. However, in the main, both theory and research have reinforced the importance of social support for an individual's health (Hartup, 1989; Rueger et al., 2016; Viner et al., 2012). While we have brought attention to the potentially importance of social support for youth living in an out-of-home, residential placement, future research will have to address the directionality in the association social support has with mental health.

Limitations

The cross-sectional design in this study inhibits a discussion of causal influences. Instead, the associations reported here for a socially vulnerable group should provide a basis for hypotheses that could be tested using a more sophisticated longitudinal design. Most of the data examined are based on adolescent reports, which may be subject to unknown biases. The listed number of social support providers on the SSQ is limited and should be expanded to include additional sources, including teachers and previous foster parents (if applicable). The respondents should also have the option of adding additional support providers missing from the list. Whereas the SSQ-N score reflects the breadth of perceived social support across types of people who may be supportive, it does not provide a total count of supportive persons. It is possible that a larger number of supportive persons in a particular category, such as friends, could outweigh the lack of support across several other categories.

Moreover, it would have been beneficial to expand the adolescent background variables, including an overview of their previous residences, age at each placement, length of stay at each residence (including the present RYC), frequency of contact with their birth family, and frequency of contact with friends. Finally, it would have been useful to know whether the adolescents already had mental health problems at the time of placement in RYC

or if these problems developed during their stay in RYC. A prospective longitudinal study of adolescents' experiences in RYC would be highly informative.

Recommendations for Future Practice

Because social support from staff appears crucial for adolescents' mental health when living in RYC, the relational competence of staff should be further developed. In addition, RYC staff should have basic knowledge of psychiatric diagnoses and how these symptoms impact adolescents' daily lives. This knowledge could positively influence the staffs' approach to adolescents with different mental health challenges and facilitate trustful relationships between adolescents and staff. Previous research has asserted that perceived social support depends on personal qualities and a match between adolescent and adult qualities and that different staff members often successfully regulate different adolescents (Lakey & Orehek, 2011). Therefore, it would be highly recommended that the staff at any given RYC consist of members with different backgrounds and experiences to increase the possibility of such matches. Finally, these vulnerable adolescents' transistion to adulthood should be highly prioritized through supportive and flexible aftercare, with the adolescents' primary contact at the institution as a coordinator. RYC staff members often provide a secure base for adolescents and have expanded knowledge of the adolescents' needs from living with them over time. We should strive to avoid distressing disrupted attachments in such an important developmental transition.

Conclusion

Living in a caring environment and perceiving social support from significant others in the absence of parental support is associated with a reduced symptom load of psychiatric disorders for adolescents in RYC. Perceiving social support from several different types of support persons is associated with a reduction of symptom loads for emotional symptoms for both girls and boys. Girls perceiving social support from friends and RYC staff report a lower

symptom load of emotional disorders, while boys report a lower symptom load of behavioral disorders when perceiving social support from the staff. This new and expanded knowledge is important for the further development of practice in RYC and emphasizes the need for a secure base and stable providers of social support for vulnerable adolescents in a challenging period of life. The main conclusion of the current study is that RYC staff members, as primary caregivers, serve an important role in providing social support in the absence of parental support for adolescents in RYC. The presence and quality of their support are associated with better adolescent outcomes, both emotionally and behaviorally, and may positively influence adolescents' further development.

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Paper III

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Health and Quality of Life Outcomes

RESEARCH Open Access

Perceived social support and quality of life among adolescents in residential youth care: a cross-sectional study

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Abstract

Background: Residential youth care (RYC) institutions aim to provide care and stability for vulnerable adolescents with several previous and present challenges, such as disrupted attachments, wide-ranging adverse childhood experiences, mental health problems, and poor quality of life (QoL). To the best of our knowledge, the present study is the first to provide knowledge of the associations between perceived social support and QoL and to explore the potential moderating effect of perceived social support on QoL for adolescents who have experienced maltreatment and polyvictimization.

Methods: All RYC institutions with adolescents between the ages 12–23 in Norway were asked to participate in the study. A total of 86 institutions housing 601 adolescents accepted the invitation, from which 400 adolescents volunteered to participate. The Child and Adolescent Psychiatric Interview was used to gather information on maltreatment histories and degree of victimization; the Kinder Lebensqualität Fragebogen was used to measure QoL through several domains (overall QoL, physical well-being, emotional well-being, and self-esteem); and the Social Support Questionnaire was used to measure perceived social support. Linear regression and independent samples t-test were used to study the associations between perceived social support and QoL as well as the potential moderating effect of perceived social support in the association between maltreatment history and QoL.

Results: Perceived social support was positively associated with QoL for both girls and boys, with domain-specific findings. A higher number of different types of support persons was associated with overall QoL, emotional well-being, and self-esteem for boys, but only with self-esteem for girls. Individual social support from RYC staff and friends was associated with higher QoL for girls. However, perceived social support did not moderate the association between maltreatment history and reduced QoL for either sex.

Conclusions: This study emphasizes the importance of maintaining social support networks for adolescents living in RYC, the crucial contribution of RYC staff in facilitating social support, and the potential value of social skills training for these vulnerable adolescents. Furthermore, a wider range of initiatives beyond social support must be carried out to increase QoL among adolescents with major maltreatment and polyvictimization experiences.

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Keywords: Adolescents, Residential youth care, Health-related quality of life, Perceived social support, Maltreatment, Polyvictimization

Background

Adolescents living in residential youth care (RYC) institutions often have a background characterized by adverse childhood experiences (ACE), including abuse, neglect, and household dysfunction, making them more prone to negative emotional, behavioral, and social developmental outcomes [1–3] as well as lower quality of life (QoL) [4, 5]. Consequently, the professional monitoring and establishment of a positive social climate are important in avoiding negative outcomes [6, 7]. Knowledge of the potential protective factors for vulnerable adolescents' development while living in RYC is generally lacking despite its integral role in providing optimal care and in informing policies and practices for providing high-quality RYC institutions. Perceiving social support can be relevant in this regard; however, adolescents in RYC report lower perceived social support [8] compared to adolescents in the general population. Thus, the aim of the current study is to investigate the associations between perceived social support and QoL for these high-risk adolescents and determine the potential moderating effect of perceived social support on QoL for those with maltreatment and polyvictimization experiences.

Adolescents living in RYC

Adolescents living in RYC are characterized as a vulnerable population, often having experienced neglect and abuse during their childhood [2, 9]. Such a background can potentially lead to poor interpersonal relationships and feelings of instability and distrust, especially when the traumatic event occurs within the family [10, 11]. RYC placements by the Norwegian Child Welfare Services (CWS) are aimed at adolescents who have faced a wide range of challenges or have been raised in troubled backgrounds, making it reasonable to assume that they have experienced neglect to some extent. A Norwegian study among foster children found that 86.3% had experienced serious neglect [12]. Growing up with ACE, several placements, and disrupted attachments have been associated with behavioral, psychological, social, and educational problems among adolescents [13–15]. During adolescence, the extensive biological, social, and psychological developments [16] are also influenced by both individual and environmental factors [17]. Even though the primary purpose of RYC placements is to support positive development with the provision of a safe and caring environment, the strain caused by the immediate change in residency can disrupt previously established healthy attachments and ultimately negatively impact the adolescents' mental health, perceived stress, and social relationships [18, 19]. Consequently, these psychosocial strains put them at greater risk for poor QoL [4, 20], mental health problems [21, 22], and low levels of perceived social support [8].

Quality of life

QoL refers to an individual's subjective perception of well-being in different life domains. For the adolescent population, a broader coverage of this concept is preferred, including measures of QoL related to family, friends, and school [23]. For this reason, we use the health-related definition of QoL, which views it as "a psychological construct which describes the physical, mental, social, psychological and functional aspects of well-being and function from the patient perspective" [24].

Most of the related research have found that girls report lower QoL compared to boys [4, 25], with one exception for disadvantaged youths, where no sex difference has been found [26]. Past research generally reported decreasing QoL and subjective well-being at younger ages [4, 25]. Moreover, both personal and environmental psychosocial risk factors may influence an individual's sense of well-being, thereby affecting QoL [25]. Previous experiences of maltreatment, mental health problems, and other stressful life events have also been associated with poor QoL [20, 27, 28]. The sparse research on adolescents living in RYC report significantly poorer QoL than adolescents living with their biological families [4, 25]. Jozefiak and Kayed [5] studied the same population as in the current study and found that, compared to the general population, adolescents in RYC reported lower scores in the life-domains of physical well-being (PWB), emotional well-being (EWB), self-esteem and friends, which raise major concerns. Greger and colleagues [20] also found a dose–response relationship between the number of types of ACE and QoL, which has also been reported in other populations [29, 30]. Despite these findings and the fact that several researchers have stated a need for more in-depth investigations of the potential predictors of high-risk adolescents' QoL [4, 25, 31], research on the potentially moderating factors for QoL among adolescents with experiences of maltreatment and polyvictimization is still lacking.

Perceived social support

Perceived social support is defined as the availability of people who make one feel cared about, valued, and loved [32]. Having social relationships with others is a basic human need and is important for a healthy development, as early relational experiences affect and form the quality of and expectations in later social relationships [33, 34]. For adolescents in RYC, a previous lack of stable social relationships and reliable care could cause a mistrust of others and insecurity in their present social relationships [3, 11]. However, new social relationships can still develop positively, as previous experiences are not automatically transferred into new social relationships, and the strength of each social relation is person-specific [31, 35]. For adolescents in RYC, identifying the potential possible social support providers is particularly important, as they may require substitute support persons in the case of inadequate parental support.

One study on the same population as the current study found that adolescents in RYC perceive less social support than adolescents in the general population, with mothers, friends, and RYC staff serving as the important social support providers [8]. Additionally, boys in RYC tend to perceive lower social support than girls [36], whereas girls tend to be more available for emotional closeness in social relationships than boys [37, 38]. Social support, however, is especially important for these vulnerable adolescents, as it has been found to reduce feelings of stress and can facilitate successful adaptation to new situations [39, 40]. Social support is also positively associated with well-being [41], adjustment [36], mental health [42, 43], and educational achievement [44]. However, despite the importance of social support and the risks associated with inadequate support, studies on the associations between social support and QoL for adolescents living in RYC remain sparse.

Quality of life and perceived social support

Social relationships [33, 45] have been found to influence adolescents' QoL [46], with research suggesting that having a high number of available social resources helps ensure that vulnerable adolescents maintain good QoL. Mendonça and Simões [26] found positive associations between QoL and the availability of social support from multiple sources among socioeconomically disadvantaged youth, but only allowed for three social support categories with poor differentiation among important sources. Alriksson-Schmidt and colleagues [47] found that the availability of several social resources could lead to better QoL for adolescents with mobility disability. However, neither of these studies included adolescents in the out-of-home care setting, nor did they investigate the number of different support persons or individual social support providers.

For adolescents in the general population, family members play a salient role in QoL and overall life-satisfaction [48, 49], especially parents who help in monitoring and developing their communication skills [50]. As adolescents in RYC are separated from their biological families, identifying other adults who can serve as a partial substitute for the lack of parental presence and support, such as the RYC staff [51], is important. The RYC staff can serve as valuable contributors to the overall well-being of adolescents living in RYC [37]. In fact, adolescents who stayed longer in RYC reported higher QoL than those with shorter stays [25], possibly suggesting that secure attachments with the RYC staff can develop over time. Another study found that interpersonal relationships with parents, staff, and friends are the most frequently reported determinants of better overall QoL for adolescents in RYC [52]. However, given the lack of empirical evidence, these hypotheses need further investigation. To the best of our knowledge, no study has investigated the unique effects of parental, friend, or staff support on the QoL of adolescents living in RYC.

While the number of childhood adversities has been found to be positively associated with poorer QoL [20], the potential moderating factors should also be investigated, including perceived social support. In a recent study on the QoL of adolescents in the general population, the association between maltreatment and QoL remained significant, and perceived social support moderated the negative effects of the maltreatment [29]. However, other studies claim that perceiving social support is insufficient as a protective factor for adolescents who have experienced severe child maltreatment and abuse [53, 54]. Currently, the potential moderating effect of perceived social support for high-risk adolescents living in RYC has yet to be adequately investigated.

Aims of the current study

The current study aims to investigate the associations between perceived social support and QoL, as well as the potential moderating effect of perceived social support on maltreated adolescents' QoL. Hence, we propose the following hypotheses:

(1) Perceived social support from a high number of support persons is associated with better QoL.
(2) The association between perceived social support and QoL depends on the individuals from whom the adolescents perceive social support.
(3) Perceived social support moderates the negative effects of maltreatment on adolescents' QoL.

As previous research has established the importance of sex and age in relation to measuring QoL [55], sex and age differences will be controlled for in the current study.

Methods

Data

Setting

The Norwegian Directorate for Children, Youth, and Family has the responsibility for overseeing the operation of RYC facilities in Norway, where children and adolescents aged 12–23 years (>18 only if volunteering for placement) are placed according to the Child Welfare Act. These placements are often due to family problems, parents' inability to provide care, parents' substance use, or adolescent behavior problems [6, 56]. The adolescents in the current sample reported the following main reasons for their first out-of-home placement: problems between the adolescent and the parents (43.4%), such as constant arguing, disagreements, or violence, and individual adolescent (30.6%) or parental (25.6%) characteristics, referring to extensive problems with, for example, anger or violence, apart from wide ranging mental health problems or issues related to substance use.

Norwegian RYC institutions usually house 3–5 residents at a time, with the aim of providing a home-like, caring environment for the adolescents. As they are not primary treatment facilities, direct services are provided by other community agencies. The institutional staff are responsible for the everyday care of the adolescents and serve as substitute parents as they are the adolescents' primary caregivers while living in RYC. Aside from providing care, monitoring, and support, the staff also initiate participation in school (almost 70% attend school) and leisure activities for the adolescents. For each adolescent, one of the staff members functions as a primary contact with the overall responsibility for the adolescent while living in RYC [57]. The staff either work three shifts per day (daytime, evening, or night shift) or they stay at the institutions for 3–7 days before having a longer period off. The educational backgrounds of the staff members differ, as only 50% are required to have relevant education [57]. Over 90% of the adolescents also have contact with their parents or previous caregivers while living in RYC.

Study population

The data used in the current study were obtained from the Norwegian research project entitled *Mental Health in Adolescents Living in Residential Youth Care* [21]. All adolescents aged 12–23, living in RYC facilities in Norway, and fulfilling the inclusion criteria, were asked to participate in the study. Exclusion was due to both individual and institutional characteristics, described in detail in Fig. 1. In short, 86 institutions accepted participation (N = 601), whereas 201 adolescents did not give their consent. Anonymous CBCL-scores (Child Behavior Checklist) were collected for the non-participants, making it possible to perform an attrition analysis, which shows the statistically significant representativeness of participants on mental health scores (please see Jozefiak et al. [21] for further information). A total of 400 adolescents agreed to participate in the study, giving a response rate of 67%. Table 1 presents the main characteristics of the sample. Of those included in the study, 304 completed the Social Support Questionnaire (SSQ), 300 completed the Kinder Lebensqualität Fragebogen (KINDL-R), and 298 adolescents completed both questionnaires. Attrition analysis showed that completers and non-completers had similar distributions for sex, age, age at first out-of-home placement, and total CBCL score [see Additional file 1].

Procedures

All RYC institutions in Norway were randomly arranged in a database, and representative staff were contacted personally by research assistants. In the period between 2011 and 2014, four trained research assistants with comprehensive education and work experience with children and their families carried out the data collection. Adolescents, primary contacts, and leaders at the institutions completed different questionnaires. When necessary, breaks were adapted for the adolescents, and data collection was conducted over two days to minimize the strain. Each adolescent was compensated with 500 NOK, and four randomly chosen adolescents won an I-phone.

Instruments

The Kinder Lebensqualität Fragebogen (KINDL-R)

To measure QoL, we used the Norwegian translation of The Kinder Lebensqualität Fragebogen revised version (KINDL-R) [23], a well-established instrument used in numerous clinical and epidemiological studies. KINDL-R consists of 24 items divided into six subscales: Physical well-being (PWB), Emotional well-being (EWB), Self-esteem, Family, Friends, and School. Each item addresses the child's experiences over the past week rated on a 5-point scale, ranging from 1 (never) to 5 (always). A sum score is calculated for each subscale and for the overall score, where a higher score indicates better QoL (max = 100). The questionnaire has shown good scale fit and satisfactory internal consistency [58] and test–retest reliability [59]. For the present study, the subscales Family, School, and Friends were excluded. The Family subscale, which include questions related to family life in the past week, was not relevant for the current population. The School subscale was removed for the main analysis, because 29% of the participants were not attending

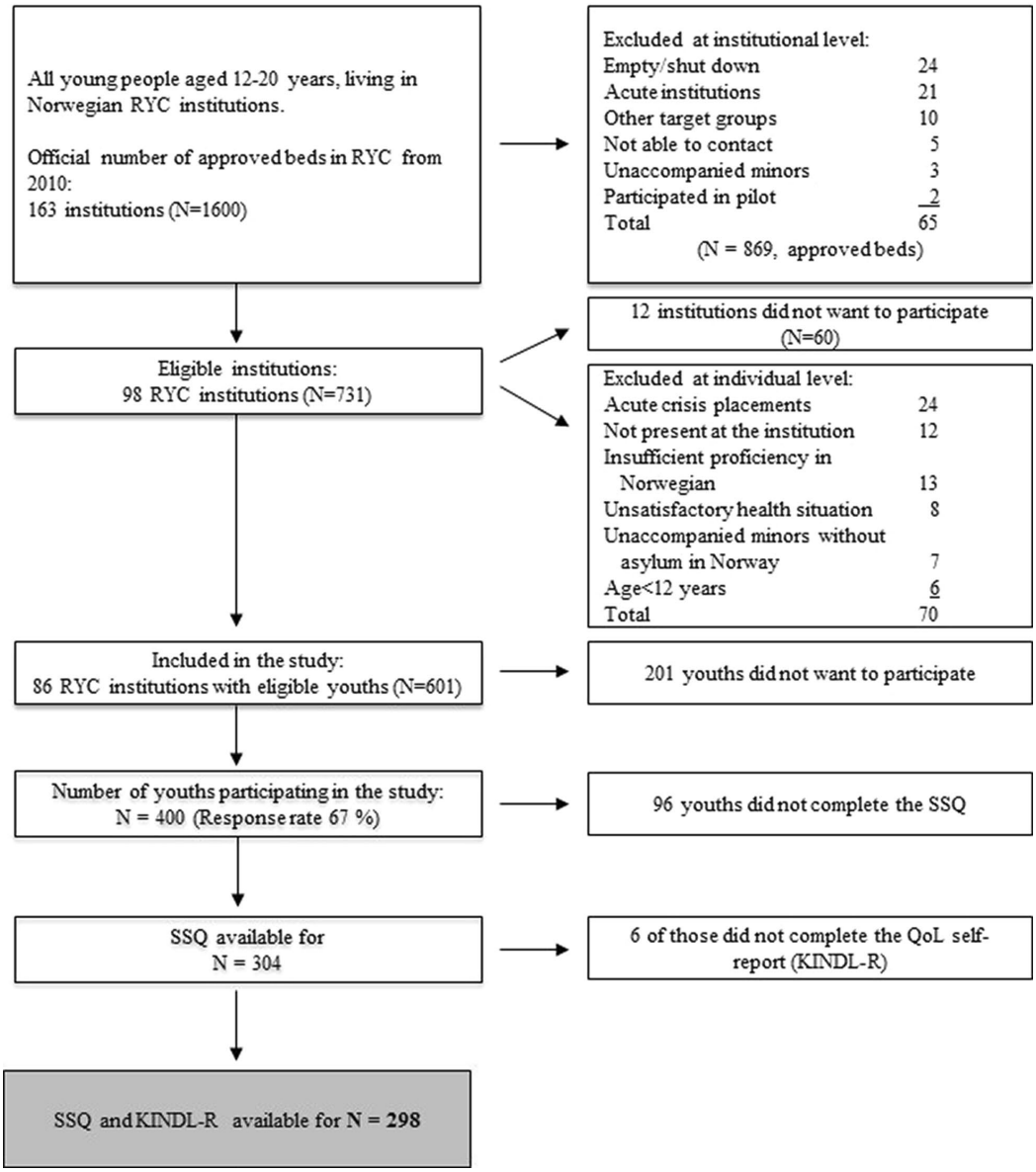

Fig. 1 Flow chart for the inclusion of participants. Not able to contact = if the institutional staff did not respond to repeated approaches about participation over a period of several months. There were no significant differences between participating and non-participating institutions with regard to geography and ownership. RYC = Residential Youth Care; SSQ = Social Support Questionnaire; QoL = Quality of Life

school, although additional analyses were conducted separately for the participants who were currently enrolled (N = 193). The Friend subscale was removed due to

Table 1 Sample characteristics

	Total sample N = 400	Girls N = 231 57.8%	Boys N = 169 42.3%
Age			
Mean (SD)	16.5 (1.36)	16.7 (1.25)	16.2 (1.47)
12–13	3.5%	0.9%	7.1%
14–16	48.5%	44.1%	54.4%
17–20	48%	55%	38.5%
Age at first placement			
Mean (SD)	12.52 (3.88)	12.63 (3.74)	12.37 (4.07)
0–2 years	4.6%	3.5%	6.0%
3–5 years	3.9%	4.0%	3.6%
6–12 years	25%	25.7%	24.1%
13–15 years	49.5%	50.0%	48.8%
16–17 years	17%	16.8%	17.5%
Number of placements			
Mean (SD)	3.34 (2.44)	3.61 (2.70)	2.97 (1.98)
1	19.0%	18.1%	20.1%
2	26.3%	22.4%	31.8%
3–5	41.2%	41.4%	41.0%
> 5	13.5%	18.1%	7.1%
Reason for first placement			
Problems parent–child	43.4%	45.7%	40.2%
Parental characteristics	25.5%	33.9%	14.2%
Adolescent characteristics	30.6%	27.4%	34.9%
Attending school/work	78.5%	72.7%	86.4%
Attending school	68%	62.3%	75.7%
Work practice	7.5%	8.7%	5.9%
Attending work	3.8%	3.0%	4.7%

conceptual overlap with the SSQ (e.g., "I was a success with my friends" and "I got along well with my friends").

Social Support Questionnaire (SSQ)

The Social Support Questionnaire measures three aspects of perceived social support, including perceived number of different types of support persons (SSQ-N), social support satisfaction (SSQ-S), and perceived social support from different social support providers. As the satisfaction scale only measures satisfaction with the perceived support in each situation, not individually for each provider, and that the adolescents are generally satisfied with the support perceived [8], we chose not to include this scale in our analyses. Instead, in the current study, we used a short 5-item version [60] developed from the original 27-item version [32]. Briefly, the questionnaire examines who the adolescents can turn to (nine possible support persons) in five hypothetical situations, including different social support domains. First, the SSQ-N score is calculated by counting the number of different types of support persons listed over the five items. This score is then divided by the number of items to exclude overlapping counts of the support persons for the overall SSQ-N score. This score measures the perceived breadth of the respondents' social support network. Second, perceived social support from different providers can be investigated separately and compared to those adolescents not perceiving support from the same group of providers. More detailed information on the SSQ is given in Singstad et al. [43]. The internal consistencies for the scores in the currently used version of the SSQ were $\alpha = 0.79$ for SSQ-N and $\alpha = 0.76$ for SSQ-S.

Childhood adversity

Information about childhood adversity was drawn mainly from selected questions from a semi-structured psychiatric interview (The Child and Adolescent Psychiatric Assessment/CAPA). In addition, a measure of household dysfunction was created based on information from a questionnaire completed by the adolescents. Those who confirmed that their parents had a history of mental health problems, often got drunk or used drugs, or that they had been removed from the family home because of parental crime, alcohol or drug abuse, or psychiatric problems received a positive score on household dysfunction. We constructed a scale wherein the numbers of types of adversities were added. These adversities included the following: *witness of violence, victim of physical violence, victim of family violence, victim of sexual abuse, and household dysfunction*. Greger et al. [2] provided specific information about childhood adversity in the current sample.

Statistical analyses

We used linear regression analyses with the overall QoL score and each of the three subscale scores, separately, as dependent variables, with the overall SSQ-N score serving as the covariate, adjusting for age. Independent samples t-test was used to investigate mean level differences in overall QoL and for each subscale score dependent of indications of support from each type of social support provider. To investigate the possible moderating effect of a perceived social support to maltreated adolescents' QoL, we used linear regression with overall QoL as the dependent variable as well as the social support variable and the childhood adversity scale and their interactions as covariates, adjusting for age. The normality of residuals was checked by visual inspection of the Q-Q plots [61]. All analyses were conducted separately for girls and boys.

These analyses were performed using SPSS version 26. Results are regarded statistically significant where p

values < 0.05. We report 95% confidence intervals (CI) where relevant.

Ethics

The project was approved by The Norwegian Regional Committee for Medical and Health Research Ethics (Project 2014/1516). The approved procedures were used in the recruitment of participants, and all participants (including the primary caregiver for those under the age of 16) had to sign an informed consent form before participation.

Results

Quality of Life and Breath of Support Network

As detailed in Table 2, for girls, a higher number of different types of support persons (overall SSQ-N) was significantly associated only with higher self-esteem QoL ($p = 0.014$). For boys, significant associations were found with higher overall QoL ($p = 0.005$), EWB ($p = 0.020$), and self-esteem ($p = 0.001$). A separate analysis on those participating in school (N = 193) revealed no association with the school QoL.

Quality of Life and Different Providers of Social Support

As detailed in Table 3, perceiving social support from parents was not significantly associated with higher overall QoL nor for any subscale for either girls or boys. Girls perceiving staff support reported significantly higher self-esteem compared to those who did not perceive staff support ($p = 0.038$). For boys, perceiving social support from staff was not significantly associated with any of the QoL scores. Whereas perceiving friend support was significantly associated with an increase in all QoL scores for girls, including overall QoL ($p = 0.002$), PWB ($p = 0.012$), EWB ($p = 0.010$), and self-esteem QoL ($p = 0.003$), no increase in the QoL scores for boys were found.

Additional analyses for the school participants' reports on the School subscale for girls found associations between overall QoL and perceiving staff support ($p = 0.029$) and friend support ($p = 0.001$). No significant associations were found for perceived social support from individual support providers and overall QoL for boys in the school-participant group.

Moderating effect of perceived social support on maltreated adolescents' QoL

Table 4 presents the results from analyses to test the moderation by different social support aspects in the relationship between childhood adversity and overall QoL. As none of the relevant interaction terms were statistically significant, and the corresponding confidence intervals were wide, the results did not confirm moderation by either overall SSQ-N or perceiving support from any of the sources considered here.

Discussion

Our results showed that QoL is associated with perceived social support for adolescents living in RYC, although there are differences between girls and boys. For the number of different types of support persons, most associations to QoL were found for boys, namely, for overall QoL, EWB, and self-esteem. For girls, significant associations were only observed for self-esteem. For different providers of support, significant associations were found for girls between the self-esteem and perceiving staff support and for all QoL aspects when perceiving friend support. For boys, no significant associations were found in relation to different providers of support. In addition, perceiving social support did not moderate the negative effects of previous experiences of maltreatment and polyvictimization on adolescents' QoL.

Quality of life and breath of support network

For boys living in RYC, a higher number of different types of support persons is associated with better QoL in several domains, including overall QoL, EWB, and

Table 2 Associations between QoL domains and overall SSQ-N score

QoL-score	SSQ-N					
	Girls			Boys		
	b	95% CI	*p*	b	95% CI	*p*
Overall QoL	2.20	[− .28 to 4.68]	.08	3.31	[1.05 to 5.58]	**.005**
PWB	1.71	[− 1.22 to 4.65]	.25	1.37	[− 1.11 to 3.85]	.28
EWB	1.27	[− 1.58 to 4.12]	.38	3.11	[.50 to 5.72]	**.020**
Self-esteem	3.62	[.75 to 6.50]	**.014**	5.46	[2.15 to 8.78]	**.001**

All analyses are adjusted for age

QoL, Quality of Life; overall SSQ-N score, total number of different types of support persons; PWB, Physical Well-Being; EWB, Emotional Well-Being

Bold: $p < 0.05$

Table 3 QoL scores depending on perceived social support from different providers, separately for girls and boys

Support provider and QoL-score	Girls						Boys					
	Perceived support						Perceived support					
	No		Yes		Difference		No		Yes		Difference	
	n	Mean	n	Mean	Estimate [95% CI]	*p*	n	Mean	n	Mean	Estimate [95% CI]	*p*
Mother												
Overall QoL	55	49.36	114	50.26	− .900 [− 7.85 to 6.05]	.80	39	64.26	90	67.11	− 2.844 [− 10.00 to 4.31]	.43
PWB	55	50.68	114	49.12	1.559 [− 6.53 to 9.65]	.70	39	67.15	90	70.56	− 3.408 [− 11.04 to 4.22]	.38
EWB	55	57.84	114	59.70	− 1.863 [− 9.80 to 6.07]	.64	39	69.55	90	72.15	− 2.602 [− 10.82 to 5.61]	.53
Self-esteem	55	39.55	114	41.94	− 2.395 [− 10.49 to 5.70]	.56	39	56.09	90	58.61	− 2.521 [− 13.10 to 8.06]	.64
School[a]	38	48.87	65	50.66	− 1.782 [− 9.41 to 5.85]	.64	30	61.69	60	67.90	− 6.215 [− 14.09 to 1.66]	.12
Father												
Overall QoL	97	48.71	72	51.65	− 2.938 [− 9.51 to 3.63]	.38	60	65.90	69	66.55	− .643 [− 7.25 to 5.96]	.85
PWB	97	48.52	72	51.13	− 2.610 [− 10.27 to 5.05]	.50	60	69.90	69	69.20	.693 [− 6.35 to 7.74]	.85
EWB	97	56.64	72	62.41	− 5.777 [− 13.25 to 1.69]	.13	60	71.25	69	71.47	− .217 [− 7.79 to 7.36]	.96
Self-esteem	97	40.98	72	41.41	− .427 [− 8.10 to 7.25]	.91	60	56.56	69	58.97	− 2.405 [− 12.15 to 7.34]	.63
School[a]	63	48.97	40	51.62	− 2.655 [− 10.20 to 4.89]	.49	43	64.35	47	67.19	− 2.839 [− 10.35 to 4.67]	.46
Staff												
Overall QoL	63	47.16	106	51.63	− 4.475 [− 11.18 to 2.23]	.19	41	65.35	88	66.67	− 1.321 [− 8.39 to 5.75]	.71
PWB	63	49.90	106	49.47	.431 [− 7.41 to 8.27]	.91	41	67.53	88	70.45	− 2.924 [− 10.46 to 4.61]	.44
EWB	63	55.56	106	61.20	− 5.647 [− 13.29 to 2.00]	.15	41	71.80	88	71.16	.634 [− 7.48 to 8.75]	.88
Self-esteem	63	36.01	106	44.22	− 8.210 [− 15.96 to − .46]	**.038**	41	56.71	88	58.38	− 1.673 [− 12.12 to 8.77]	.75
School[a]	34	44.27	69	52.82	− 8.555 [− 16.21 to − .90]	**.029**	27	66.83	63	65.40	1.431 [− 6.78 to 9.64]	.73
Friend												
Overall QoL	16	34.24	153	51.61	− 17.362 [− 28.17 to − 6.56]	**.002**	15	62.22	114	66.78	− 4.554 [− 14.80 to 5.69]	.38
PWB	16	34.77	153	51.18	− 16.419 [− 29.13 to − 3.71]	**.012**	15	64.58	114	70.18	− 5.592 [− 16.52 to 5.33]	.31
EWB	16	44.14	153	60.66	− 16.521 [− 28.97 to − 4.07]	**.010**	15	69.58	114	71.60	− 2.018 [− 13.80 to 9.77]	.74
Self-esteem	16	23.83	153	42.97	− 19.146 [− 31.77 to − 6.52]	**.003**	15	52.50	114	58.55	− 6.053 [− 21.19 to 9.09]	.43
School[a]	7	26.79	96	51.69	− 24.905 [− 38.70 to − 11.11]	**.001**	12	59.95	78	66.74	− 6.787 [− 17.77 to 4.19]	.22

Respondents are included in the groups «No support» and «support» regarding on whether they perceive the actual support person as a source of support or not. The section for school participants only include overall QoL (consisting of the subscales PWB, EWB, Self-esteem, and School)

QoL, Quality of Life; CI, confidence interval; PWB, Physical Well-Being; EWB, Emotional Well-Being

[a] Reported only by those enrolled in school, and for overall QoL only

Bold: $p < 0.05$

self-esteem. This is not a surprising finding, as EWB covers the degree of happiness, loneliness, and insecurity. Boys have previously been reported to seek activity in their interactions and seem to benefit the most from receiving social support through group activities [62]. Therefore, having several different support providers who are available in multiple areas can, for example, improve their degree of happiness and contribute to less feelings of loneliness. This also applies to the association with self-esteem, which measures, for example, feelings of worth and satisfaction with one`s own performance. The presence of positive relationships and having a sense of acceptance and being valued through supportive relationships are likely to increase the adolescents' self-esteem [32, 63]. This also applies to girls based on the significant association found between self-esteem and the breadth of their social network.

Quality of life and different providers of social support

For adolescent girls' QoL, perceiving social support from some specific social support providers (i.e., institutional staff and friends) appears important. Girls perceiving staff support reported higher self-esteem compared to those without this support, although the result is not highly significant. One can assume that institutional staff have an important contribution in supporting these girls in everyday life, possibly fostering a belief in themselves and their own capacity. As girls report a higher need of closeness and one-to-one interactions in their supportive relationships

Table 4 Potential moderation by social support in the relationship between childhood adversity and overall QoL

	Overall QoL							
	Girls (N = 148)				Boys (N = 112)			
	b	95% CI		*p*	b	95% CI		*p*
		Lower	Upper			Lower	Upper	
CAS	−4.37	−7.34	−1.40	**.004**	−2.76	−6.13	.618	.11
Overall SSQ-N*CAS	−1.28	−3.47	.92	.25	−.97	−3.34	1.41	.42
Mother supp.*CAS	−3.12	−9.41	3.17	.33	−2.56	−9.68	4.57	.48
Father supp. * CAS	−2.63	−8.63	3.37	.39	−4.81	−11.65	2.03	.17
Staff supp. * CAS	−2.07	−8.66	4.53	.54	.09	−6.88	7.06	.98
Friend supp. * CAS	3.81	−4.64	12.27	.37	−3.65	−15.57	8.28	.55

The first line shows the regression coefficient for the CAS as independent variable. The rest of the table shows the coefficient for the interaction between a social support variable and the CAS, in an analysis including these variables and their interaction. All analyses are adjusted for age

QoL, Quality of Life; overall SSQ-N, total number of different types of support persons; CAS, Childhood Adversity Scale

Bold: $p < 0.05$

compared to boys [37, 64], the presence and stability of the institutional staff are crucial in this context. Whereas parents most often are the important contributors to children's self-esteem [65], it might be that the institutional staff can substitute for the lack of parental presence for girls while they live in RYC, which would be encouraging.

Additional analyses on the school participants found significant associations between perceived staff support and overall QoL. Adolescents attending school while in RYC are younger (mean age = 16.0) than those who are not attending school (mean age = 16.9, $p < 0.01$). Therefore, given that younger adolescents are often in need of significant support from their primary caregivers [8, 66], it is not surprising that the RYC staff are important contributors to these girls' feelings of security and being cared for in the absence of parental support [8, 67]. The fact that the RYC staff can promote positive outcomes, such as higher well-being for adolescents living in RYC, is consistent with previous research [40, 68, 69]. It is a well-known fact that friends become increasingly important with higher age [66, 70], so the significant associations between friend support and QoL across all domains for girls are not surprising, as they coincide with previous research [52]. Girls mostly report valuing closeness and the emotional aspects of social support through one-to-one interactions [38, 62, 70], so that they consider being cared for, valued, and accepted by friends as particularly important during adolescence [8, 70]. This is also associated with better QoL for girls. For boys, perceiving social support from individual providers did not appear to play a role in their QoL.

The potential moderating effect of perceived social support on maltreated adolescents QoL

We did not find any evidence to support the hypothesis that perceived social support moderated the effect of maltreatment on these adolescents' QoL. Adolescents living in RYC are particularly vulnerable, as they have simultaneous experiences of maltreatment, household dysfunction, and out-of-home placements. We know that they report poor QoL compared to peers in the general population and that there is a dose–response relationship between the number of events and poorer QoL [20]. Previous research have found that a higher number of childhood adversities reduces the likelihood of social support being a moderator for the adolescents' poor QoL [53, 54]. The current lack of statistically significant results concerning both the number of different types of support persons and individual support providers strengthens the knowledge of the critical long-term consequences of growing up with child maltreatment and household dysfunction [1, 20]. Perceiving social support does not seem by itself to protect these vulnerable adolescents' QoL while living in RYC.

Limitations

The cross-sectional nature of this study limits the interpretation of our results. First, the current study cannot state the causal relationships between perceived social support and QoL; it can only indicate the need for a longitudinal study of these associations. Second, more background variables concerning the respondents, such as mental health before and at the time of placement, age at each placement, length of stay in each out-of-home placement, and frequency of contact with significant

others outside the RYC, would have been beneficial and could have provided deeper insights. In addition, we did not have the opportunity to include parents as respondents in measuring QoL, because the adolescents did not live at home, which led to the exclusion of considering family functioning. School functioning was also excluded, because it did not apply to a portion of those in RYC. Furthermore, we lacked measurement of QoL for about 25% of the adolescents participating in the overall study, but the analytic sample appeared to be representative because distributions of sex, age, and internalizing and externalizing mental health problems did not differ between the completers and the non-completers.

The SSQ also has some limitations. In measuring perceived social support, additional sources of social support could be addressed, including the opportunity to add unnamed sources. This would have provided deeper insights into the role of different social support providers in improving the QoL of adolescents in RYC.

Future practice

As research on the associations between perceived social support and QoL for this vulnerable group of adolescents is generally lacking, results should be helpful in developing practices to provide the best care possible in RYC and in planning further research. Given that maltreatment is common among these adolescents [20], it is reasonable to assume a high prevalence of social skill deficit in this group [71]. As social support is associated with increased QoL, more specifically to a wider social network for boys and for friend and staff support for girls, further development of social skills and the conduct of social skills training should be prioritized in RYC. An increase in these adolescents' social skills might contribute to both maintaining and establishing social relationships while living in RYC. The RYC staff also have an important role in ensuring the maintenance of the already established social networks for these adolescents, so they can benefit from their positive effects while living in RYC. At the same time, one should be cautious regarding the possible negative influence some friends could have on the adolescents' behaviors [72]. Arenas for socialization, preferably close to the institutions, should be prioritized. Finally, the length of the residential stays influence adolescents' well-being, adjustment, and relations to the staff [36]. Thus, disruptions in the RYC placement should be prevented.

Given that perceiving social support does not appear by itself to moderate the negative effects of maltreatment and polyvictimization on these adolescents' QoL, other initiatives should be explored to help them improve their QoL. Knowledge about other factors that could moderate the association between the negative effects of maltreatment and QoL would be highly valuable, as it can broaden the scope of possible solutions to help these vulnerable adolescents. Finally, these findings highlight the need for more research on potentially protective factors for adolescents in RYC.

Conclusions

Adolescents living in RYC typically have several previous negative life experiences and face a high prevalence of current difficulties and challenges, which are likely to have a negative effect on their QoL. Therefore, increasing these adolescents' QoL should be a priority for national authorities as they work on providing the best care possible in RYC. The current study suggests that adolescents' social support network has an important contribution to their QoL. However, various aspects of social support appear differentially beneficial for girls and boys. A larger network of different types of support persons appears significant for boys, whereas specific providers of social support (especially friends) providing one-to-one interactions appear most beneficial for girls. In summary, these findings expand our current knowledge of the potential critical factors contributing to adolescents' QoL while living in RYC facilities.

Supplementary Information

The online version contains supplementary material available at https://doi.org/10.1186/s12955-021-01676-1.

Additional file 1. Descriptive statistics for completers and non-completers of the Social Support Questionnaire.

Abbreviations

ACE: Adverse childhood experiences; CAPA: The Child and Adolescent Psychiatric Assessment; CBCL: Child Behavior Checklist; CWS: Child welfare services; EWB: Emotional well-being; KINDL-R: The Kinder Lebensqualitat Fragebogen revised version; PWB: Physical well-being; QoL: Quality of life; RYC: Residential youth care; SSQ: Social support questionnaire; Overall SSQ-N: Total number of different types of support persons; SSQ-S: Social support satisfaction.

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Authors' contributions

MTS conceived of the study and its design, carried out the statistical analyses, and drafted the manuscript. JW conceived in the study design, interpretation of the results and contributed in writing the manuscript. HG contributed in the study design, interpretation of results, and in writing the manuscript. SL supervised the statistical analyses. NSK conceived of the study and its design and contributed in interpretation of results and writing the manuscript. All authors read and approved the final manuscript.

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Availability of data and materials
The datasets used and analyzed during the current study are available from the corresponding author on reasonable request.

Ethics approval and consent to participate
The project was approved by The Norwegian Regional Committee for Medical and Health Research Ethics. Approved procedures were used in recruitment of participants, and all participants (including primary caregiver for those under the age of 16) had to sign an informed consent before participation.

Consent for publication
Not applicable.

Competing interest
The authors declare that they have no competing interests.

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Publisher's Note

Appendix

Appendix 1. Symptom loads for each diagnostic category.

Anxiety (Agoraphobia without panic, Generalized Anxiety Disorder, Social Phobia, Specific Phobia, and Panic Attacks) **Max score = 10**
Anxiety about being in places or situations from which escape might be difficult
Excessive anxiety and worry
Restlessness or feeling keyed up or on edge
Being easily fatigued
Difficulty concentrating or mind going blank
Irritability
Muscle tension
Sleep disturbance (difficulty falling or staying asleep, or restless unsatisfying sleep)
Fear of social or performance situations in which the person is exposed to unfamiliar people or to possible scrutiny by others.
Specific phobia
Depression (Major Depressive Disorder and Dysthymia) **Max score = 11**
Depressed mood (e.g. feels sad or empty, appears tearful or irritable mood)
Diminished interest or pleasure in activities
Weight loss/gain, or decrease/increase in appetite
Insomnia or hypersomnia
Psychomotor agitation or retardation
Fatigue or loss of energy
Feelings of worthlessness or guilt
Diminished ability to think/concentrate, or indecisiveness
Thoughts of death, suicidal ideation with/without a specific plan, or a suicide attempt
Low self-esteem
Feelings of hopelessness
Conduct Disorder **Max score = 15**
Bullies, threatens, or intimidates others
Initiates physical fights
(Fights more than once per month)
Has used a weapon that can cause serious physical harm to others (used weapon more than once)
Has been physically cruel to people
Has been physically cruel to animals
Has stolen while confronting a victim (e.g. mugging, purse snatching, extortion, armed robbery)
Has forced someone into sexual activity
Has deliberately engaged in fire setting with the intention of causing serious damage
Has deliberately destroyed others property (other than by fire setting)
Has broken into someone else`s house, building, or car
Lies to obtain goods or favors or to avoid obligations
Has stolen items of nontrivial value without confronting a victim
Stays out at night despite parental prohibitions
Has run away from home over night
Often truant from school
ADHD **Max score = 19**
Fails to give close attention to details in schoolwork, work, or other activities

Make careless mistakes in schoolwork, work, or other activities
Difficulty sustaining attention in tasks or play activities
Does not seem to listen when spoken to directly
Does not follow through on instructions and fails to finish e.g. schoolwork
Difficulty organizing tasks and activities
Avoids, dislikes, or is reluctant to engage in tasks that require sustained mental effort
Often loses things necessary for tasks or activities
Is easily distracted by extraneous stimuli
Forgetful in daily activities
Fidgets with hands or feet or squirms in seat
Leaves seat in classroom or in other situations in which remaining seated is expected
Runs about or climbs excessively in situations in which it is inappropriate (in adolescents, may be limited to subjective feelings of restlessness)
Difficulty playing or engaging in leisure activities quietly
Is often “on the go” or often acts as if “driven by a motor”
Talks excessively
Blurts out answers before questions have been completed
Difficulty awaiting turn
Interrupts or intrudes on others

Appendix 2. The Social Support Questionnaire (Norwegian version).

D. HVEM KAN GI DEG STØTTE OG HJELP? SSQ

De følgende spørsmålene handler om mennesker rundt deg som kan gi deg støtte eller hjelp. *Dersom det mest passende svaret på et spørsmål er «ingen», er det viktig at du likevel krysser av for hvor tilfreds du er alt i alt.*

1. Tenk deg at du hadde et personlig problem og følte deg utafor og trist. Hvem er det sannsynlig at du ville snakke med, søke hjelp hos?

Sett ett eller flere kryss. ⇨

1. Ingen .. ☐
2. Mor ..... ☐
3. Far ..... ☐
4. Partner/kjæreste .... ☐
5. Søsken ..... ☐
6. Venn(er) ..... ☐
7. Slektning(er) ..... ☐
8. Nabo(er) ..... ☐
9. Voksne på institusjonen ..... ☐
10. Andre ..... ☐

Hvor tilfreds er du, alt i alt, med denne støtten/hjelpen? (*Bare ett kryss.*) ⇨

Svært tilfreds 1	*Nokså tilfreds* 2	*Nokså lite tilfreds* 3	*Svært lite tilfreds* 4
☐	☐	☐	☐

2. Tenk deg at du er tatt i å gjøre noe ulovlig. Du kan bli anmeldt til politiet. Du trenger hjelp og råd. Hvem er det sannsynlig at du ville gått til?

Sett ett eller flere kryss. ⇨

1. Ingen .. ☐
2. Mor ..... ☐
3. Far ..... ☐
4. Partner/kjæreste .... ☐
5. Søsken ..... ☐
6. Venn(er) ..... ☐
7. Slektning(er) ..... ☐
8. Nabo(er) ..... ☐
9. Voksne på institusjonen ..... ☐
10. Andre ..... ☐

Hvor tilfreds er du, alt i alt, med denne støtten/hjelpen? (*Bare ett kryss.*) ⇨

Svært tilfreds 1	*Nokså tilfreds* 2	*Nokså lite tilfreds* 3	*Svært lite tilfreds* 4
☐	☐	☐	☐

3. Hvem kan du virkelig regne med at kan få deg til å føle deg bedre når du er «langt nede» og «helt på felgen»?

Sett ett eller flere kryss. ⇨

1. Ingen .. ☐
2. Mor ..... ☐
3. Far ..... ☐
4. Partner/kjæreste .... ☐
5. Søsken ..... ☐
6. Venn(er) ..... ☐
7. Slektning(er) ..... ☐
8. Nabo(er) ..... ☐
9. Voksne på institusjonen ..... ☐
10. Andre ..... ☐

Hvor tilfreds er du, alt i alt, med denne støtten/hjelpen? (*Bare ett kryss.*) ⇨

Svært tilfreds 1	*Nokså tilfreds* 2	*Nokså lite tilfreds* 3	*Svært lite tilfreds* 4
☐	☐	☐	☐

4. Tenk deg at du i morgen måtte velge hvilken utdanning du skulle satse på eller si «ja» eller «nei» til et jobbtilbud. Du er svært usikker på hva du skal gjøre. Hvem er det sannsynlig at du ville gå til for å få råd og hjelp?

Sett ett eller flere kryss. ⇨

1. Ingen .. ☐
2. Mor ..... ☐
3. Far ..... ☐
4. Partner/kjæreste .... ☐
5. Søsken ..... ☐
6. Venn(er) ..... ☐
7. Slektning(er) ..... ☐
8. Nabo(er) ..... ☐
9. Voksne på institusjonen ..... ☐
10. Andre ..... ☐

Hvor tilfreds er du, alt i alt, med denne støtten/hjelpen? (*Bare ett kryss.*) ⇨

Svært tilfreds 1	*Nokså tilfreds* 2	*Nokså lite tilfreds* 3	*Svært lite tilfreds* 4
☐	☐	☐	☐

5. Hvem godtar deg fullt og helt – både dine gode og dårlige sider?

Sett ett eller flere kryss. ⇨

1. Ingen .. ☐
2. Mor ..... ☐
3. Far ..... ☐
4. Partner/kjæreste .... ☐
5. Søsken ..... ☐
6. Venn(er) ..... ☐
7. Slektning(er) ..... ☐
8. Nabo(er) ..... ☐
9. Voksne på institusjonen ..... ☐
10. Andre ..... ☐

Hvor tilfreds er du, alt i alt, med denne støtten/hjelpen? (*Bare ett kryss.*) ⇨

Svært tilfreds 1	*Nokså tilfreds* 2	*Nokså lite tilfreds* 3	*Svært lite tilfreds* 4
☐	☐	☐	☐

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